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(54) Title: COMPOSITIONS, KITS, AND METHODS FOR IDENTIFICATION, ASSESSMENT, PREVENTION, AND THERAPY OF OVARIAN CANCER

(57) Abstract: The invention relates to compositions, kits, and methods for detecting, characterizing, preventing, and treating human ovarian cancers. A variety of markers are provided, wherein changes in the levels of expression of one or more of the markers is correlated with the presence of ovarian cancer.

COMPOSITIONS, KITS, AND METHODS FOR IDENTIFICATION, ASSESSMENT, PREVENTION, AND THERAPY OF OVARIAN CANCER

RELATED APPLICATIONS

The present application claims priority to U.S. provisional patent application serial no. 60/152,547, filed on September 3, 1999, U.S. provisional patent application serial no. 60/190,347, filed on March 16, 2000, U.S. provisional patent application serial no. 60/191,321, filed on March 21, 2000, U.S. provisional patent application serial no. 60/208,382, filed on May 31, 2000 and U.S. provisional patent application serial no. 60/220,467, filed on July 20, 2000, all of which are expressly incorporated by reference.

FIELD OF THE INVENTION

The field of the invention is ovarian cancer, including diagnosis, characterization, management, and therapy of ovarian cancer.

BACKGROUND OF THE INVENTION

Ovarian cancer is responsible for significant morbidity and mortality in populations around the world. Ovarian cancer is classified, on the basis of clinical and pathological features, in three groups, namely epithelial ovarian cancer (EOC; >90% of ovarian cancer in Western countries), germ cell tumors (*circa* 2-3% of ovarian cancer), and stromal ovarian cancer (*circa* 5% of ovarian cancer; Ozols *et al.*, 1997, *Cancer Principles and Practice of Oncology*, 5th ed., DeVita *et al.*, Eds. pp. 1502). Relative to EOC, germ cell tumors and stromal ovarian cancers are more easily detected and treated at an early stage, translating into higher/better survival rates for patients afflicted with these two types of ovarian cancer.

There are numerous types of ovarian tumors, some of which are benign, and others of which are malignant. Treatment (including non-treatment) options and predictions of patient outcome depend on accurate classification of the ovarian cancer. Ovarian cancers are named according to the type of cells from which the cancer is derived and whether the ovarian cancer is benign or malignant. Recognized histological tumor types include, for example, serous, mucinous, endometrioid, and clear cell

tumors. In addition, ovarian cancers are classified according to recognized grade and stage scales.

In grade I, the tumor tissue is well differentiated from normal ovarian tissue. In grade II, tumor tissue is moderately well differentiated. In grade III, the tumor tissue is poorly differentiated from normal tissue, and this grade correlates with a less favorable prognosis than grades I and II. Stage I is generally confined within the capsule surrounding one (stage IA) or both (stage IB) ovaries, although in some stage I (*i.e.* stage IC) cancers, malignant cells may be detected in ascites, in peritoneal rinse fluid, or on the surface of the ovaries. Stage II involves extension or metastasis of the tumor from one or both ovaries to other pelvic structures. In stage IIA, the tumor extends or has metastasized to the uterus, the fallopian tubes, or both. Stage IIB involves extension of the tumor to the pelvis. Stage IIC is stage IIA or IIB in which malignant cells may be detected in ascites, in peritoneal rinse fluid, or on the surface of the ovaries. In stage III, the tumor comprises at least one malignant extension to the small bowel or the omentum, has formed extrapelvic peritoneal implants of microscopic (stage IIIA) or macroscopic (< 2 centimeter diameter, stage IIIB; > 2 centimeter diameter, stage IIIC) size, or has metastasized to a retroperitoneal or inguinal lymph node (an alternate indicator of stage IIIC). In stage IV, distant (*i.e.* non-peritoneal) metastases of the tumor can be detected.

The durations of the various stages of ovarian cancer are not presently known, but are believed to be at least about a year each (Richart *et al.*, 1969, *Am. J. Obstet. Gynecol.* 105:386). Prognosis declines with increasing stage designation. For example, 5-year survival rates for patients diagnosed with stage I, II, III, and IV ovarian cancer are 80%, 57%, 25%, and 8%, respectively.

Despite being the third most prevalent gynecological cancer, ovarian cancer is the leading cause of death among those afflicted with gynecological cancers. The disproportionate mortality of ovarian cancer is attributable to a substantial absence of symptoms among those afflicted with early-stage ovarian cancer and to difficulty diagnosing ovarian cancer at an early stage. Patients afflicted with ovarian cancer most often present with non-specific complaints, such as abnormal vaginal bleeding, gastrointestinal symptoms, urinary tract symptoms, lower abdominal pain, and generalized abdominal distension. These patients rarely present with paraneoplastic

symptoms or with symptoms which clearly indicate their affliction. Presently, less than about 40% of patients afflicted with ovarian cancer present with stage I or stage II. Management of ovarian cancer would be significantly enhanced if the disease could be detected at an earlier stage, when treatments are much more generally efficacious.

Ovarian cancer may be diagnosed, in part, by collecting a routine medical history from a patient and by performing physical examination, x-ray examination, and chemical and hematological studies on the patient. Hematological tests which may be indicative of ovarian cancer in a patient include analyses of serum levels of proteins designated CA125 and DF3 and plasma levels of lysophosphatidic acid (LPA). Palpation of the ovaries and ultrasound techniques (particularly including endovaginal ultrasound and color Doppler flow ultrasound techniques) can aid detection of ovarian tumors and differentiation of ovarian cancer from benign ovarian cysts. However, a definitive diagnosis of ovarian cancer typically requires performing exploratory laparotomy of the patient.

Potential tests for the detection of ovarian cancer (*e.g.*, screening, reflex or monitoring) may be characterized by a number of factors. The "sensitivity" of an assay refers to the probability that the test will yield a positive result in an individual afflicted with ovarian cancer. The "specificity" of an assay refers to the probability that the test will yield a negative result in an individual not afflicted with ovarian cancer. The "positive predictive value" (PPV) of an assay is the ratio of true positive results (*i.e.* positive assay results for patients afflicted with ovarian cancer) to all positive results (*i.e.* positive assay results for patients afflicted with ovarian cancer + positive assay results for patients not afflicted with ovarian cancer). It has been estimated that in order for an assay to be an appropriate population-wide screening tool for ovarian cancer the assay must have a PPV of at least about 10% (Rosenthal *et al.*, 1998, *Sem. Oncol.* 25:315-325). It would thus be desirable for a screening assay for detecting ovarian cancer in patients to have a high sensitivity and a high PPV. Monitoring and reflex tests would also require appropriate specifications.

Owing to the cost, limited sensitivity, and limited specificity of known methods of detecting ovarian cancer, screening is not presently performed for the general population. In addition, the need to perform laparotomy in order to diagnose ovarian cancer in patients who screen positive for indications of ovarian cancer limits the

desirability of population-wide screening, such that a PPV even greater than 10% would be desirable.

Prior use of serum CA125 level as a diagnostic marker for ovarian cancer indicated that this method exhibited insufficient specificity for use as a general screening method. Use of a refined algorithm for interpreting CA125 levels in serial retrospective samples obtained from patients improved the specificity of the method without shifting detection of ovarian cancer to an earlier stage (Skakes, 1995, *Cancer* 76:2004). Screening for LPA to detect gynecological cancers including ovarian cancer exhibited a sensitivity of about 96% and a specificity of about 89%. However, CA125-based screening methods and LPA-based screening methods are hampered by the presence of CA125 and LPA, respectively, in the serum of patients afflicted with conditions other than ovarian cancer. For example, serum CA125 levels are known to be associated with menstruation, pregnancy, gastrointestinal and hepatic conditions such as colitis and cirrhosis, pericarditis, renal disease, and various non-ovarian malignancies. Serum LPA is known, for example, to be affected by the presence of non-ovarian gynecological malignancies. A screening method having a greater specificity for ovarian cancer than the current screening methods for CA125 and LPA could provide a population-wide screening for early stage ovarian cancer.

Presently greater than about 60% of ovarian cancers diagnosed in patients are stage III or stage IV cancers. Treatment at these stages is largely limited to cytoreductive surgery (when feasible) and chemotherapy, both of which aim to slow the spread and development of metastasized tumor. Substantially all late stage ovarian cancer patients currently undergo combination chemotherapy as primary treatment, usually a combination of a platinum compound and a taxane. Median survival for responding patients is about one year. Combination chemotherapy involving agents such as doxorubicin, cyclophosphamide, cisplatin, hexamethylmelamine, paclitaxel, and methotrexate may improve survival rates in these groups, relative to single-agent therapies. Various recently-developed chemotherapeutic agents and treatment regimens have also demonstrated usefulness for treatment of advanced ovarian cancer. For example, use of the topoisomerase I inhibitor topectan, use of amifostine to minimize chemotherapeutic side effects, and use of intraperitoneal chemotherapy for patients having peritoneally implanted tumors have demonstrated at least limited utility.

Presently, however, the 5-year survival rate for patients afflicted with stage III ovarian cancer is 25%, and the survival rate for patients afflicted with stage IV ovarian cancer is 8%.

In summary, the earlier ovarian cancer is detected, the aggressiveness of therapeutic intervention and the side effects associated with therapeutic intervention are minimized. More importantly, the earlier the cancer is detected, the survival rate and quality of life of ovarian cancer patients is enhanced. Thus, a pressing need exists for methods of detecting ovarian cancer as early as possible. There also exists a need for methods of detecting recurrence of ovarian cancer as well as methods for predicting and monitoring the efficacy of treatment. The present invention satisfies these needs.

SUMMARY OF THE INVENTION

The invention relates to a method of assessing whether a patient is afflicted with ovarian cancer. This method comprises the step of comparing the level of expression of a marker in a patient sample, wherein the marker is listed in Tables 1-11, and the normal level of expression of the marker in a control, *e.g.*, a sample from a patient without ovarian cancer. A significant difference between the level of expression of the marker in the patient sample and the normal level is an indication that the patient is afflicted with ovarian cancer. In a preferred embodiment, the marker is listed in Tables 2B or 2C (which are subsets of the markers listed in Table 2A), in Tables 3B or 3C (which are subsets of the markers listed in Table 3A), in Tables 4A or 5A (which are subsets of the markers listed in Tables 4 and 5, respectively), in Table 6A, in Tables 7A-7E or in Table 8. Preferably, a protein corresponding to the marker is a secreted protein or is predicted to correspond to a secreted protein (see, *e.g.* Tables 2D, 4A, 7A-7E). Alternatively, the marker can correspond to a protein which is normally expressed in ovarian tissue at a detectable level, to one having an extracellular portion, or both (see *e.g.*, Table 8).

In one method, the marker(s) are preferably selected such that the positive predictive value of the method is at least about 10%. Also preferred are embodiments of the method wherein the marker is over- or under-expressed by at least two-fold in at least about 20% of stage I ovarian cancer patients, stage II ovarian cancer patients, stage III ovarian cancer patients, stage IV ovarian cancer patients, grade I ovarian cancer patients, grade II ovarian cancer patients, grade III ovarian cancer patients, epithelial

ovarian cancer patients, stromal ovarian cancer patients, germ cell ovarian cancer patients, malignant ovarian cancer patients, benign ovarian patients, serous neoplasm ovarian cancer patients, mucinous neoplasm ovarian cancer patients, endometrioid neoplasm ovarian cancer patients and/or clear cell neoplasm ovarian cancer patients.

In one embodiment of the methods of the present invention, the patient sample is an ovary-associated body fluid. Such fluids include, for example, blood fluids, lymph, ascitic fluids, gynecological fluids, cystic fluids, urine, and fluids collected by peritoneal rinsing. In another embodiment, the sample comprises cells obtained from the patient. In this embodiment, the cells may be found in a fluid selected from the group consisting of a fluid collected by peritoneal rinsing, a fluid collected by uterine rinsing, a uterine fluid, a uterine exudate, a pleural fluid, and an ovarian exudate. In another embodiment, the patient sample is *in vivo*.

In accordance with the methods of the present invention, the level of expression of the marker in a sample can be assessed, for example, by detecting the presence in the sample of :

- a protein corresponding to the marker or a fragment of the protein (*e.g.* using a reagent, such as an antibody, an antibody derivative, or an antibody fragment, which binds specifically with the protein)
- a metabolite which is produced directly (*i.e.*, catalyzed) or indirectly by a protein corresponding to the marker
- a transcribed polynucleotide (*e.g.* an mRNA or a cDNA), or fragment thereof, having at least a portion with which the marker is substantially homologous (*e.g.* by contacting a mixture of transcribed polynucleotides obtained from the sample with a substrate having one or more of the markers listed in Tables 1-11 fixed thereto at selected positions)
- a transcribed polynucleotide or fragment thereof, wherein the polynucleotide anneals with the marker under stringent hybridization conditions.

The methods of the present invention are particularly useful for patients with an identified pelvic mass or symptoms associated with ovarian cancer. The methods of the present invention can also be of particular use with patients having an enhanced risk of developing ovarian cancer (*e.g.*, patients having a familial history of ovarian cancer,

patients identified as having a mutant oncogene, and patients at least about 50 years of age). The methods of the present invention may further be of particular use in monitoring the efficacy of treatment of an ovarian cancer patient (*e.g.* the efficacy of chemotherapy).

The methods of the present invention may be performed using a plurality (*e.g.* 2, 3, 5, or 10 or more) of markers. According to a method involving a plurality of markers, the level of expression in the sample of each of a plurality of markers independently selected from the markers listed in Tables 1-11 is compared with the normal level of expression of each of the plurality of markers in samples of the same type obtained from control humans not afflicted with ovarian cancer. A significantly enhanced level of expression of one or more of the markers listed in Tables 1, 1A, 2A, 4 and 6, 6A, 7A, 7B, 7D and 8, a significantly reduced level of expression of one or more of the markers listed in Tables 3A, 5, 7C and 7E, or some combination thereof, in the sample, relative to the corresponding normal levels, is an indication that the patient is afflicted with ovarian cancer. The markers of Tables 1-11 may also be used in combination with known ovarian cancer markers in the methods of the present invention.

In a preferred method of assessing whether a patient is afflicted with ovarian cancer (*e.g.,* new detection ("screening"), detection of recurrence, reflex testing), the method comprises comparing:

a) the level of expression of a marker in a patient sample, wherein at least one marker is selected from the markers of Tables 1-11 and,

b) the normal level of expression of the marker in a control non-ovarian cancer sample.

A significant difference between the level of expression of the marker in the patient sample and the normal level is an indication that the patient is afflicted with ovarian cancer.

The methods of the present invention further include a method of assessing the efficacy of a test compound for inhibiting ovarian cancer in a patient. This method comprises comparing:

a) expression of a marker in a first sample obtained from the patient and maintained in the presence of the test compound, wherein the marker is selected from the group consisting of the markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8, and

b) expression of the marker in a second sample obtained from the patient and maintained in the absence of the test compound.

A significantly lower level of expression of the marker in the first sample, relative to the second sample, is an indication that the test compound is efficacious for inhibiting ovarian cancer in the patient. For example, the first and second samples can be portions of a single sample obtained from the patient or portions of pooled samples obtained from the patient.

The invention still further includes a method of assessing the efficacy of a test compound for inhibiting ovarian cancer in a patient. This method comprises comparing:

a) expression of a marker in a first sample obtained from the patient and maintained in the presence of the test compound, wherein the marker is selected from the group consisting of the markers listed in Tables 3A, 5, 7C and 7E, and

b) expression of the marker in a second sample obtained from the patient and maintained in the absence of the test compound.

A significantly enhanced level of expression of the marker in the first sample, relative to the second sample, is an indication that the test compound is efficacious for inhibiting the ovarian cancer in the patient.

The invention further relates to a method of assessing the efficacy of a therapy for inhibiting ovarian cancer in a patient. This method comprises comparing:

a) expression of a marker in a first sample obtained from the patient prior to providing at least a portion of the therapy to the patient, wherein the marker is selected from the group consisting of the markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8, and

b) expression of the marker in a second sample obtained from the patient following provision of the portion of the therapy.

A significantly lower level of expression of the marker in the second sample, relative to the first sample, is an indication that the therapy is efficacious for inhibiting ovarian cancer in the patient.

The invention further includes a method of assessing the efficacy of a therapy for inhibiting ovarian cancer in a patient, comprising comparing:

a) expression of a marker in a first sample obtained from the patient prior to providing at least a portion of the therapy to the patient, wherein the marker is selected from the group consisting of the markers listed in Tables 3A, 5, 7C and 7E, and

b) expression of the marker in a second sample obtained from the patient following provision of the portion of the therapy.

A significantly enhanced level of expression of the marker in the second sample, relative to the first sample, is an indication that the therapy is efficacious for inhibiting ovarian cancer in the patient.

It will be appreciated that in these methods the "therapy" may be any traditional therapy for treating ovarian cancer including, but not limited to, chemotherapy, radiation therapy and surgical removal of tissue, *e.g.*, an ovarian tumor. Thus, the methods of the invention may be used to evaluate a patient before, during and after therapy, for example, to evaluate the reduction in tumor burden.

The present invention therefore further comprises a method for monitoring the progression of ovarian cancer in a patient, the method comprising:

a) detecting in a patient sample at a first time point, the expression of a marker, wherein the marker is selected from the group consisting of the markers listed in Tables 1-11;

b) repeating step a) at a subsequent time point in time; and

c) comparing the level of expression detected in steps a) and b), and therefrom monitoring the progression of ovarian cancer in the patient.

The invention also includes a method of selecting a composition for inhibiting ovarian cancer in a patient. This method comprises the steps of:

a) obtaining a sample comprising cancer cells from the patient;

b) separately maintaining aliquots of the sample in the presence of a plurality of test compositions;

c) comparing expression of a marker listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8 in each of the aliquots; and

d) selecting one of the test compositions which induces a lower level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

The invention further includes a method of selecting a composition for inhibiting ovarian cancer in a patient. This method comprises the steps of:

a) obtaining a sample comprising cancer cells from the patient;

b) separately maintaining aliquots of the sample in the presence of a plurality of test compositions;

c) comparing expression of a marker listed in Tables 3A, 5, 7C and 7E in each of the aliquots; and

d) selecting one of the test compositions which induces an enhanced level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

In addition, the invention includes a method of inhibiting ovarian cancer in a patient. This method comprises the steps of:

a) obtaining a sample comprising cancer cells from the patient;

b) separately maintaining aliquots of the sample in the presence of a plurality of test compositions;

c) comparing expression of a marker listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8 in each of the aliquots; and

d) administering to the patient at least one of the test compositions which induces a lower level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

The invention also includes a method of inhibiting ovarian cancer in a patient. This method comprises the steps of:

a) obtaining a sample comprising cancer cells from the patient;

b) separately maintaining aliquots of the sample in the presence of a plurality of test compositions;

c) comparing expression of a marker listed in Tables 3A, 5, 7C and 7E, in each of the aliquots; and

d) administering to the patient at least one of the test compositions which induces an enhanced of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

The invention also includes a kit for assessing whether a patient is afflicted with ovarian cancer. This kit comprises reagents for assessing expression of a marker listed in Tables 1-11.

In another aspect, the invention relates to a kit for assessing the suitability of each of a plurality of compounds for inhibiting an ovarian cancer in a patient. The kit comprises a reagent for assessing expression of a marker listed in Tables 1-11, and may also comprise a plurality of compounds.

In another aspect, the invention relates to a kit for assessing the presence of ovarian cancer cells. This kit comprises an antibody, wherein the antibody binds specifically with a protein corresponding to a marker listed in Tables 1-11. The kit may also comprise a plurality of antibodies, wherein the plurality binds specifically with a protein corresponding to a different marker listed in Tables 1-11.

The invention also includes a kit for assessing the presence of ovarian cancer cells, wherein the kit comprises a nucleic acid probe. The probe binds specifically with a transcribed polynucleotide corresponding to a marker listed in Tables 1-11. The kit may also comprise a plurality of probes, wherein each of the probes binds specifically with a transcribed polynucleotide corresponding to a different marker listed in Tables 1-11.

The invention further relates to a method of making an isolated hybridoma which produces an antibody useful for assessing whether a patient is afflicted with ovarian cancer. The method comprises isolating a protein corresponding to a marker listed in Tables 1-11, immunizing a mammal using the isolated protein, isolating splenocytes from the immunized mammal, fusing the isolated splenocytes with an immortalized cell line to form hybridomas, and screening individual hybridomas for production of an antibody which specifically binds with the protein to isolate the hybridoma. The invention also includes an antibody produced by this method.

The invention further includes a method of assessing the ovarian carcinogenic potential of a test compound. This method comprises the steps of:

a) maintaining separate aliquots of ovarian cells in the presence and absence of the test compound; and

b) comparing expression of a marker in each of the aliquots.

The marker is selected from those listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8. A significantly enhanced level of expression of the marker in the aliquot maintained in the presence of (or exposed to) the test compound, relative to the aliquot maintained in the absence of the test compound, is an indication that the test compound possesses ovarian carcinogenic potential.

The invention includes another method of assessing the ovarian carcinogenic potential of a test compound. This method comprises the steps of:

a) maintaining separate aliquots of ovarian cells in the presence and absence of the test compound; and

b) comparing expression of a marker in each of the aliquots.

In this method, the marker is selected from those listed in Tables 3A, 5, 7C and 7E. A significantly lower level of expression of the marker in the aliquot maintained in the presence of the test compound, relative to the aliquot maintained in the absence of the test compound, is an indication that the test compound possesses ovarian carcinogenic potential.

Additionally, the invention includes a kit for assessing the ovarian carcinogenic potential of a test compound. The kit comprises ovarian cells and a reagent for assessing expression of a marker in each of the aliquots. The marker is selected from those listed in Tables 1-11.

The invention further relates to a method of treating a patient afflicted with ovarian cancer. This method comprises providing to cells of the patient a protein corresponding to a marker listed in Tables 3A, 5, 7C and 7E. The protein can be provided to the cells, for example, by providing a vector comprising a polynucleotide encoding the protein to the cells.

The invention includes another method of treating a patient afflicted with ovarian cancer. This method comprises providing to cells of the patient an antisense oligonucleotide complementary to a polynucleotide corresponding to a marker listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8.

The invention includes a method of inhibiting ovarian cancer in a patient at risk for developing ovarian cancer. This method comprises inhibiting expression or overexpression of a gene corresponding to a marker listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8.

The invention includes another method of inhibiting ovarian cancer in a patient at risk for developing ovarian cancer. This method comprises enhancing expression of a gene corresponding to a marker listed in Tables 3A, 5, 7C and 7E.

It will be appreciated that the methods and kits of the present invention may also include known cancer markers including known ovarian cancer markers. It will further be appreciated that the methods and kits may be used to identify cancers other than ovarian cancer.

DETAILED DESCRIPTION OF THE INVENTION

The invention relates to newly discovered correlations between expression of certain markers and the cancerous state of ovarian cells. It has been discovered that the level of expression of individual markers and combinations of markers described herein correlates with the presence of ovarian cancer in a patient. Methods are provided for detecting the presence of ovarian cancer in a sample, the absence of ovarian cancer in a sample, the stage of an ovarian cancer, and with other characteristics of ovarian cancer that are relevant to prevention, diagnosis, characterization, and therapy of ovarian cancer in a patient.

Definitions

As used herein, each of the following terms has the meaning associated with it in this section.

The articles "a" and "an" are used herein to refer to one or to more than one (*i.e.* to at least one) of the grammatical object of the article. By way of example, "an element" means one element or more than one element.

A "marker" of the invention is a naturally-occurring polymer corresponding to at least one of the nucleic acids listed in Tables 1-11. In particular, a marker of the invention may be a nucleic acid molecule comprising a sequence listed in Tables 1-11 or a sequence which hybridizes under high stringency conditions with a polynucleotide sequence listed in Tables 1-11 ("nucleic acid marker"). Nucleic acid markers include, without limitation, sense and anti-sense strands of genomic DNA (*i.e.* including any introns occurring therein), RNA generated by transcription of genomic DNA (*i.e.* prior to splicing), RNA generated by splicing of RNA transcribed from genomic DNA, and proteins generated by translation of spliced RNA (*i.e.* including proteins both before and after cleavage of normally cleaved regions such as transmembrane signal sequences). As used herein, "marker" may also include a cDNA made by reverse transcription of an RNA generated by transcription of genomic DNA (including spliced RNA). A marker of the invention also may be a protein encoded by, for example, a nucleic acid marker.

The term "probe" refers to any molecule which is capable of selectively binding to a specifically intended target molecule, for example a marker of the invention. Probes can be either synthesized by one skilled in the art, or derived from appropriate biological preparations. For purposes of detection of the target molecule, probes may be specifically designed to be labeled, as described herein. Examples of molecules that can be utilized as probes include, but are not limited to, RNA, DNA, proteins, antibodies, and organic monomers.

An "ovary-associated" body fluid is a fluid which, when in the body of a patient, contacts or passes through ovarian cells or into which cells or proteins shed from ovarian cells *e.g.*. ovarian epithelium, are capable of passing. Exemplary ovary-associated body fluids include blood fluids, lymph, ascites, gynecological fluids, cystic fluid, urine, and fluids collected by peritoneal rinsing.

The "normal" level of expression of a marker is the level of expression of the marker in ovarian cells of a patient, *e.g.* a human, not afflicted with ovarian cancer.

"Over-expression" and "under-expression" of a marker refer to expression of the marker of a patient at a greater or lesser level, respectively, than normal level of expression of the marker (*e.g.* at least two-fold greater or lesser level).

As used herein, the term "promoter/regulatory sequence" means a nucleic acid sequence which is required for expression of a gene product operably linked to the promoter/regulatory sequence. In some instances, this sequence may be the core promoter sequence and in other instances, this sequence may also include an enhancer sequence and other regulatory elements which are required for expression of the gene product. The promoter/regulatory sequence may, for example, be one which expresses the gene product in a tissue-specific manner.

A "constitutive" promoter is a nucleotide sequence which, when operably linked with a polynucleotide which encodes or specifies a gene product, causes the gene product to be produced in a living human cell under most or all physiological conditions of the cell.

An "inducible" promoter is a nucleotide sequence which, when operably linked with a polynucleotide which encodes or specifies a gene product, causes the gene product to be produced in a living human cell substantially only when an inducer which corresponds to the promoter is present in the cell.

A "tissue-specific" promoter is a nucleotide sequence which, when operably linked with a polynucleotide which encodes or specifies a gene product, causes the gene product to be produced in a living human cell substantially only if the cell is a cell of the tissue type corresponding to the promoter.

A "transcribed polynucleotide" is a polynucleotide (*e.g.* an RNA, a cDNA, or an analog of one of an RNA or cDNA) which is complementary to or homologous with all or a portion of a mature RNA made by transcription of a genomic DNA corresponding to a marker of the invention and normal post-transcriptional processing (*e.g.* splicing), if any, of the transcript.

"Complementary" refers to the broad concept of sequence complementarity between regions of two nucleic acid strands or between two regions of the same nucleic acid strand. It is known that an adenine residue of a first nucleic acid region is capable of forming specific hydrogen bonds ("base pairing") with a residue of a second nucleic acid region which is antiparallel to the first region if the residue is thymine or uracil. Similarly, it is known that a cytosine residue of a first nucleic acid strand is capable of base pairing with a residue of a second nucleic acid strand which is antiparallel to the first strand if the residue is guanine. A first region of a nucleic acid is complementary to

a second region of the same or a different nucleic acid if, when the two regions are arranged in an antiparallel fashion, at least one nucleotide residue of the first region is capable of base pairing with a residue of the second region. Preferably, the first region comprises a first portion and the second region comprises a second portion, whereby, when the first and second portions are arranged in an antiparallel fashion, at least about 50%, and preferably at least about 75%, at least about 90%, or at least about 95% of the nucleotide residues of the first portion are capable of base pairing with nucleotide residues in the second portion. More preferably, all nucleotide residues of the first portion are capable of base pairing with nucleotide residues in the second portion.

"Homologous" as used herein, refers to nucleotide sequence similarity between two regions of the same nucleic acid strand or between regions of two different nucleic acid strands. When a nucleotide residue position in both regions is occupied by the same nucleotide residue, then the regions are homologous at that position. A first region is homologous to a second region if at least one nucleotide residue position of each region is occupied by the same residue. Homology between two regions is expressed in terms of the proportion of nucleotide residue positions of the two regions that are occupied by the same nucleotide residue. By way of example, a region having the nucleotide sequence 5'-ATTGCC-3' and a region having the nucleotide sequence 5'-TATGGC-3' share 50% homology. Preferably, the first region comprises a first portion and the second region comprises a second portion, whereby, at least about 50%, and preferably at least about 75%, at least about 90%, or at least about 95% of the nucleotide residue positions of each of the portions are occupied by the same nucleotide residue. More preferably, all nucleotide residue positions of each of the portions are occupied by the same nucleotide residue.

A marker is "fixed" to a substrate if it is covalently or non-covalently associated with the substrate such the substrate can be rinsed with a fluid (*e.g.* standard saline citrate, pH 7.4) without a substantial fraction of the marker dissociating from the substrate.

As used herein, a "naturally-occurring" nucleic acid molecule refers to an RNA or DNA molecule having a nucleotide sequence that occurs in nature (*e.g.* encodes a natural protein).

Expression of a marker in a patient is "significantly" higher or lower than the normal level of expression of a marker if the level of expression of the marker is greater or less, respectively, than the normal level by an amount greater than the standard error of the assay employed to assess expression, and preferably at least twice, and more preferably three, four, five or ten times that amount. Alternately, expression of the marker in the patient can be considered "significantly" higher or lower than the normal level of expression if the level of expression is at least about two, and preferably at least about three, four, or five times, higher or lower, respectively, than the normal level of expression of the marker.

Ovarian cancer is "inhibited" if at least one symptom of the cancer is alleviated, terminated, slowed, or prevented. As used herein, ovarian cancer is also "inhibited" if recurrence or metastasis of the cancer is reduced, slowed, delayed, or prevented.

A kit is any manufacture (*e.g.* a package or container) comprising at least one reagent, *e.g.* a probe, for specifically detecting a marker of the invention, the manufacture being promoted, distributed, or sold as a unit for performing the methods of the present invention.

Description

The present invention is based, in part, on identification of markers which are expressed at a different level in ovarian cancer cells than they are in normal (*i.e.* non-cancerous) ovarian cells. The markers of the invention correspond to nucleic acid and polypeptide molecules which can be detected in one or both of normal and cancerous ovarian cells. The presence, absence, or level of expression of one or more of these markers in ovarian cells is herein correlated with the cancerous state of the tissue. The invention thus includes compositions, kits, and methods for assessing the cancerous state of ovarian cells (*e.g.* cells obtained from a human, cultured human cells, archived or preserved human cells and *in vivo* cells).

The compositions, kits, and methods of the invention have the following uses, among others:

1) assessing whether a patient is afflicted with ovarian cancer;
2) assessing the stage of ovarian cancer in a human patient;
3) assessing the grade of ovarian cancer in a patient;

4) assessing the benign or malignant nature of ovarian cancer in a patient;

5) assessing the histological type of neoplasm (*e.g.* serous, mucinous, endometroid, or clear cell neoplasm) associated with ovarian cancer in a patient;

6) making an isolated hybridoma which produces an antibody useful for assessing whether a patient is afflicted with ovarian cancer;

7) assessing the presence of ovarian cancer cells;

8) assessing the efficacy of one or more test compounds for inhibiting ovarian cancer in a patient;

9) assessing the efficacy of a therapy for inhibiting ovarian cancer in a patient;

10) monitoring the progression of ovarian cancer in a patient;

11) selecting a composition or therapy for inhibiting ovarian cancer in a patient;

12) treating a patient afflicted with ovarian cancer;

13) inhibiting ovarian cancer in a patient;

14) assessing the ovarian carcinogenic potential of a test compound; and

15) inhibiting an ovarian cancer in a patient at risk for developing ovarian cancer.

The invention thus includes a method of assessing whether a patient is afflicted with ovarian cancer. This method comprises comparing the level of expression of a marker in a patient sample and the normal level of expression of the marker in a control, *e.g.*, a non-ovarian cancer sample. A significant difference between the level of expression of the marker in the patient sample and the normal level is an indication that the patient is afflicted with ovarian cancer. The marker is selected from the group consisting of the markers listed in Tables 1-11. The markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8 are expressed at a greater level in ovarian cancer cells than in normal ovarian cells. The markers listed in Tables 3A, 5, 7C and 7E are expressed at a lower level in ovarian cancer cells than in normal ovarian cells. Although one or more

molecules corresponding to the markers listed in Tables 1-11 may have been described by others, the significance of the level of expression of these markers with regard to the cancerous state of ovarian cells has not previously been recognized.

Tables 1 and 1A list markers that were identified in subtractive libraries and which are preferentially expressed in ovarian cancer cells over normal (*i.e.*, non-cancerous) ovarian cells.

Table 2A lists markers, expression of which was increased by at least 5-fold in at least one of twenty-three ovarian cancer samples tested, relative to its expression in normal (*i.e.* non-cancerous) ovarian samples. Table 2B lists markers, expression of which was increased by at least 2-fold in all twenty-three ovarian cancer samples tested, relative to its expression in normal ovarian samples. Table 2C lists markers, expression of which was increased by at least 5-fold in at least 6 of the 23 ovarian cancer samples tested, relative to its expression in normal ovarian cells. Table 2D lists markers, expression of which was increased by at least 5-fold in at least 6 of the 23 ovarian cancer samples, relative to expression in normal ovarian samples. In a preferred embodiment, proteins corresponding to the markers of Table 2D as well as fragments of the proteins, serve as antigens for antibody production, based upon proteomic studies, sequence analysis and/or literature references

Table 3A lists markers, expression of which was decreased by at least 5-fold in at least one of twenty-three ovarian cancer samples tested, relative to its expression in normal (*i.e.*, non-cancerous) ovarian cells. Table 3B lists markers, expression of which was decreased by at least 2-fold in all twenty-three ovarian cancer samples tested, relative to its expression in normal ovarian cells. Table 3C lists markers, expression of which was decreased by at least 5-fold in at least 6 of the 23 ovarian cancer samples tested, relative to its expression in normal ovarian cells.

Tables 4 and 5 list markers, expression of which was either increased (Table 4) or decreased (Table 5) in ovarian cancer samples, relative to expression in normal (*i.e.*, non-cancerous) ovarian samples. In particular, expression of the markers in 37 tumors (7 endometroid tumors, 5 clear cell tumors and 25 serous tumors) was evaluated. A ranking system based on the sum of the number of tumors multiplied by the fold regulation (for 2-fold, 3-fold, 5-fold and 10-fold regulation), divided by the total number

of tumors, was employed. A rank score was generated for four categories, endometroid tumors, clear cell tumors, serous tumors and overall.

For example, for # 19109 in Table 4A (first marker listed):

# of tumors > 2-fold: 36 = (2 x 0) = 0

# of tumors > 3-fold: 36 = (3 x 1) = 3

# of tumors > 5-fold: 35 = (5 x 3) = 15

# of tumors > 10-fold: 32 = (10 x 32) = 320

The sum is 3 plus 15 plus 320, which equals 338. The score is therefore 338 divided by 37, which equals 9.1.

The markers of Table 4 had a score of greater than 1.5 for endometroid tumors, greater than 1.5 for clear cell tumors, greater than 1 for serous tumors, or greater than 0.8 overall. Table 4A shows the markers of Table 4 with a score of greater than 3 in any of the four categories.

The markers of Table 5 had a score of greater than 2.5 for endometroid tumors, greater than 2.5 for clear cell tumors, greater than 2 for serous tumors, or greater than 1.75 overall. Table 5A shows the markers of Table 5 with a score of greater than 3 in any of the four categories.

Tables 6 and 6A list markers that were identified in subtractive libraries and which are preferentially expressed in ovarian cancer cells over normal (*i.e.*, non-cancerous) ovarian cells.

Tables 7A-7E list markers that were identified in proteomic studies. The markers of Table 7A are secreted or membrane proteins, expression of which was increased at least 5-fold in two or more ovarian cancer samples or cell lines, relative to at least a 10-fold decrease in expression in normal ovarian samples.

The markers of Table 7B are secreted or membrane proteins, expression of which was increased in one ovarian cancer sample cell line, relative to expression in normal ovarian samples, where the medium expression of normals equaled 0 (the expression level of the ovarian cancer sample and cell lines was divided by 0.001, rather than 0).

The markers of Table 7C are preferred secreted or membrane proteins, expression of which was decreased in ovarian cancer samples and cell lines, relative to expression in normal ovarian samples.

The markers of Table 7D are secreted or membrane proteins present in ovarian cancer cell supernatants.

The markers of Table 7E are secreted or membrane proteins present in normal cell supernatants.

Table 8 lists novel genes that are overexpressed in ovarian cancer samples, relative to expression in normal ovarian samples.

Table 9 summarizes TaqMan® expression data for the novel genes of Table 8.

Tables 10A-10N summarize Northern Blot analysis of the novel genes of Table 8.

Table 11 summarizes LightCycler data and RT-PCR data for various markers of the present invention.

Any marker or combination of markers listed in Tables 1-11, as well as any known markers in combination with the markers set forth in Tables 1-11, may be used in the compositions, kits, and methods of the present invention. Use of markers listed in Tables 2B, 2C, 2D, 3B, 3C, 4A, 5A, 6A, 7A-7E and 8 are preferred, wherein use of markers listed in Tables 2C, 2D, 3C, 6A, 7A-7C and 8 are more preferred. In general, it is preferable to use markers for which the difference between the level of expression of the marker in ovarian cancer cells and the level of expression of the same marker in normal ovarian cells is as great as possible. Although this difference can be as small as the limit of detection of the method for assessing expression of the marker, it is preferred that the difference be at least greater than the standard error of the assessment method, and preferably a difference of at least 2-, 3-, 4-, 5-, 6-, 7-, 8-, 9-, 10-, 15-, 20-, 25-, 100-, 500-, 1000-fold or greater.

It is recognized that certain markers correspond to proteins which are secreted from ovarian cells (*i.e.* one or both of normal and cancerous cells) to the extracellular space surrounding the cells (see, *e.g.* Tables 2D, 7A-7E and 8). These markers are preferably used in certain embodiments of the compositions, kits, and methods of the invention, owing to the fact that the protein corresponding to each of these markers can be detected in an ovary-associated body fluid sample, which may be more easily collected from a human patient than a tissue biopsy sample. In addition, preferred *in vivo* techniques for detection of a protein corresponding to a marker of the invention include introducing into a subject a labeled antibody directed against the protein. For

example, the antibody can be labeled with a radioactive marker whose presence and location in a subject can be detected by standard imaging techniques.

Although not every marker corresponding to a secreted protein is indicated as such in the Tables herein, it is a simple matter for the skilled artisan to determine whether any particular marker corresponds to a secreted protein. In order to make this determination, the protein corresponding to a marker is expressed in a test cell (*e.g.* a cell of an ovarian cell line), extracellular fluid is collected, and the presence or absence of the protein in the extracellular fluid is assessed (*e.g.* using a labeled antibody which binds specifically with the protein).

The following is an example of a method which can be used to detect secretion of a protein corresponding to a marker of the invention. About 8×10^5 293T cells are incubated at 37°C in wells containing growth medium (Dulbecco's modified Eagle's medium {DMEM} supplemented with 10% fetal bovine serum) under a 5% (v/v) CO_2, 95% air atmosphere to about 60-70% confluence. The cells are then transfected using a standard transfection mixture comprising 2 micrograms of DNA comprising an expression vector encoding the protein and 10 microliters of LipofectAMINE™ (GIBCO/BRL Catalog no. 18342-012) per well. The transfection mixture is maintained for about 5 hours, and then replaced with fresh growth medium and maintained in an air atmosphere. Each well is gently rinsed twice with DMEM which does not contain methionine or cysteine (DMEM-MC; ICN Catalog no. 16-424- 54). About 1 milliliter of DMEM-MC and about 50 microcuries of Trans-^{35}S™ reagent (ICN Catalog no. 51006) are added to each well. The wells are maintained under the 5% CO_2 atmosphere described above and incubated at 37°C for a selected period. Following incubation, 150 microliters of conditioned medium is removed and centrifuged to remove floating cells and debris. The presence of the protein in the supernatant is an indication that the protein is secreted.

Examples of ovary-associated body fluids include blood fluids (*e.g.* whole blood, blood serum, blood having platelets removed therefrom, etc.), lymph, ascitic fluids, gynecological fluids (*e.g.* ovarian, fallopian, and uterine secretions, menses, vaginal douching fluids, fluids used to rinse cervical cell samples, etc.), cystic fluid, urine, and fluids collected by peritoneal rinsing (*e.g.* fluids applied and collected during laparoscopy or fluids instilled into and withdrawn from the peritoneal cavity of a human

patient). In these embodiments, the level of expression of the marker can be assessed by assessing the amount (*e.g.* absolute amount or concentration) of the marker in an ovary-associated body fluid obtained from a patient. The fluid can, of course, be subjected to a variety of well-known post-collection preparative and storage techniques (*e.g.* storage, freezing, ultrafiltration, concentration, evaporation, centrifugation, etc.) prior to assessing the amount of the marker in the fluid.

Many ovary-associated body fluids (*i.e.* usually excluding urine) can have ovarian cells, *e.g.* ovarian epithelium, therein, particularly when the ovarian cells are cancerous, and, more particularly, when the ovarian cancer is metastasizing. Cell-containing fluids which can contain ovarian cancer cells include, but are not limited to, peritoneal ascites, fluids collected by peritoneal rinsing, fluids collected by uterine rinsing, uterine fluids such as uterine exudate and menses, pleural fluid, and ovarian exudates. Thus, the compositions, kits, and methods of the invention can be used to detect expression of markers corresponding to proteins having at least one portion which is displayed on the surface of cells which express it. Examples of such proteins are indicated in the Tables herein. Although not every protein having at least one cell-surface portion is indicated in the Tables, it is a simple matter for the skilled artisan to determine whether the protein corresponding to any particular marker comprises a cell-surface protein. For example, immunological methods may be used to detect such proteins on whole cells, or well known computer-based sequence analysis methods (*e.g.* the SIGNALP program; Nielsen *et al.*, 1997, *Protein Engineering* 10:1-6) may be used to predict the presence of at least one extracellular domain (*i.e.* including both secreted proteins and proteins having at least one cell-surface domain). Expression of a marker corresponding to a protein having at least one portion which is displayed on the surface of a cell which expresses it may be detected without necessarily lysing the cell (*e.g.* using a labeled antibody which binds specifically with a cell-surface domain of the protein).

Expression of a marker of the invention may be assessed by any of a wide variety of well known methods for detecting expression of a transcribed molecule or its corresponding protein. Non-limiting examples of such methods include immunological methods for detection of secreted, cell-surface, cytoplasmic, or nuclear proteins, protein purification methods, protein function or activity assays, nucleic acid hybridization

methods, nucleic acid reverse transcription methods, and nucleic acid amplification methods.

In a preferred embodiment, expression of a marker is assessed using an antibody (*e.g.* a radio-labeled, chromophore-labeled, fluorophore-labeled, or enzyme-labeled antibody), an antibody derivative (*e.g.* an antibody conjugated with a substrate or with the protein or ligand of a protein-ligand pair {*e.g.* biotin-streptavidin}), or an antibody fragment (*e.g.* a single-chain antibody, an isolated antibody hypervariable domain, etc.) which binds specifically with a protein corresponding to the marker, such as the protein encoded by the open reading frame corresponding to the marker or such a protein which has undergone all or a portion of its normal post-translational modification.

In another preferred embodiment, expression of a marker is assessed by preparing mRNA/cDNA (*i.e.* a transcribed polynucleotide) from cells in a patient sample, and by hybridizing the mRNA/cDNA with a reference polynucleotide which is a complement of a polynucleotide comprising the marker, and fragments thereof. cDNA can, optionally, be amplified using any of a variety of polymerase chain reaction methods prior to hybridization with the reference polynucleotide; preferably, it is not amplified. Expression of one or more markers can likewise be detected using quantitative PCR to assess the level of expression of the marker(s). Alternatively, any of the many known methods of detecting mutations or variants (*e.g.* single nucleotide polymorphisms, deletions, etc.) of a marker of the invention may be used to detect occurrence of a marker in a patient.

In a related embodiment, a mixture of transcribed polynucleotides obtained from the sample is contacted with a substrate having fixed thereto a polynucleotide complementary to or homologous with at least a portion (*e.g.* at least 7, 10, 15, 20, 25, 30, 40, 50, 100, 500, or more nucleotide residues) of a marker of the invention. If polynucleotides complementary to or homologous with are differentially detectable on the substrate (*e.g.* detectable using different chromophores or fluorophores, or fixed to different selected positions), then the levels of expression of a plurality of markers can be assessed simultaneously using a single substrate (*e.g.* a "gene chip" microarray of polynucleotides fixed at selected positions). When a method of assessing marker expression is used which involves hybridization of one nucleic acid with another, it is preferred that the hybridization be performed under stringent hybridization conditions.

Because the compositions, kits, and methods of the invention rely on detection of a difference in expression levels of one or more markers of the invention, it is preferable that the level of expression of the marker is significantly greater than the minimum detection limit of the method used to assess expression in at least one of normal ovarian cells and cancerous ovarian cells.

Preferably, at least one of the marker(s) used in the compositions, kits, and methods of the invention is a marker for which the "Tissue Prominence," as indicated in the Tables herein, includes, without limitation, an epithelial tissue such as ovarian, stomach, foreskin, colon, uterus, esophagus, synovial membrane, small intestine, breast, skin, cervix, adrenal gland, eye, gall bladder, lung, placenta, prostate and retina tissues. Preferably, the marker is one for which ovary is listed among the Tissue Prominence tissues in one or more of the Tables.

The chromosomal location corresponding to each of a number of the markers listed in the Tables herein is known and is also listed in the Tables. In addition, the chromosomal locations of a number of loci and chromosomal regions associated with ovarian cancers are known (Lynch *et al.*, 1998, *Sem. Oncol.* 25:265-280). For example, *AKT2* is located on chromosome 19 at q13.1-13.2, copy number increases have been observed at 8q24, 20q13.2-qter, 3q26.3, 1q32, 20p, 9p21-pter, 12p, and 5p14-pter, DNA amplifications have been observed at 8q24, 3q26.3, and 20q13.3, *c- MYC* is located at 8q24, *MYBL2* is located at 20q13.1, *EVII* is located at 3q26, loss of heterozygosity has been observed on chromosomes 6, 9, 13q, 17, 18q, 19p, 22q and Xp, including at locations 17p(p13.3, 13.1), 17q(q21, q22-q23), 18q (q21.3-qter), 6q(q26-q27), 11q(q23.3-qter), and 11p(p13-p15.5), *TP53* is located at 17p13.1, *BRCA1* is located at 17q21, the prohibitin gene and *NM23* are both located at 17q23-24, *NF1* is located at 17q11, and *ERBB2* is located at 17q21. At least one previously unidentified gene which contributes to development of ovarian cancer has been suggested to reside on chromosome 17 (Lynch *et al.*, *supra*), particularly on 17p, and more particularly in the vicinity of 17p13.3. Thus, markers which map to one or more of these chromosomal locations, or to a location relatively near one of these locations are preferred for use in the compositions, kits, and methods of the invention.

It is understood that by routine screening of additional patient samples using one or more of the markers of the invention, it will be realized that certain of the markers are over- or under-expressed in cancers of various types, including specific ovarian cancers, as well as other cancers such as breast cancer, cervical cancer, etc. For example, it will be confirmed that some of the markers of the invention are over- or under-expressed in most (*i.e.* 50% or more) or substantially all (*i.e.* 80% or more) of ovarian cancer. Furthermore, it will be confirmed that certain of the markers of the invention are associated with ovarian cancer of various stages (*i.e.* stage I, II, III, and IV ovarian cancers, as well as subclassifications IA, IB, IC, IIA, IIB, IIC, IIIA, IIIB, and IIIC, using the FIGO Stage Grouping system for primary carcinoma of the ovary; 1987, *Am. J. Obstet. Gynecol.* 156:236), of various histologic subtypes (*e.g.* serous, mucinous, endometroid, and clear cell subtypes, as well as subclassifications and alternate classifications adenocarcinoma, papillary adenocarcinoma, papillary cystadenocarcinoma, surface papillary carcinoma, malignant adenofibroma, cystadenofibroma, adenocarcinoma, cystadenocarcinoma, adenoacanthoma, endometrioid stromal sarcoma, mesodermal (Müllerian) mixed tumor, mesonephroid tumor, malignant carcinoma, Brenner tumor, mixed epithelial tumor, and undifferentiated carcinoma, using the WHO/FIGO system for classification of malignant ovarian tumors; Scully, *Atlas of Tumor Pathology*, 3d series, Washington DC), and various grades (*i.e.* grade I {well differentiated} , grade II {moderately well differentiated}, and grade III {poorly differentiated from surrounding normal tissue}). In addition, as a greater number of patient samples are assessed for expression of the markers of the invention and the outcomes of the individual patients from whom the samples were obtained are correlated, it will also be confirmed that altered expression of certain of the markers of the invention are strongly correlated with malignant cancers and that altered expression of other markers of the invention are strongly correlated with benign tumors. The compositions, kits, and methods of the invention are thus useful for characterizing one or more of the stage, grade, histological type, and benign/malignant nature of ovarian cancer in patients. In addition, these compositions, kits, and methods can be used to detect and differentiate epithelial, stromal, and germ cell ovarian cancers.

When the compositions, kits, and methods of the invention are used for characterizing one or more of the stage, grade, histological type, and benign/malignant nature of ovarian cancer in a patient, it is preferred that the marker or panel of markers of the invention is selected such that a positive result is obtained in at least about 20%, and preferably at least about 40%, 60%, or 80%, and more preferably in substantially all patients afflicted with an ovarian cancer of the corresponding stage, grade, histological type, or benign/malignant nature. Preferably, the marker or panel of markers of the invention is selected such that a PPV of greater than about 10% is obtained for the general population (more preferably coupled with an assay specificity greater than 99.5%).

When a plurality of markers of the invention are used in the compositions, kits, and methods of the invention, the level of expression of each marker in a patient sample can be compared with the normal level of expression of each of the plurality of markers in non-cancerous samples of the same type, either in a single reaction mixture (*i.e.* using reagents, such as different fluorescent probes, for each marker) or in individual reaction mixtures corresponding to one or more of the markers. In one embodiment, a significantly enhanced level of expression of more than one of the plurality of markers in the sample, relative to the corresponding normal levels, is an indication that the patient is afflicted with ovarian cancer. In another embodiment, a significantly lower level of expression in the sample of each of the plurality of markers, relative to the corresponding normal levels, is an indication that the patient is afflicted with ovarian cancer. In yet another embodiment, a significantly enhanced level of expression of one or more marks and a significantly lower level of expression of one or more markers in a sample relative to the corresponding normal levels, is an indication that the patient is afflicted with ovarian cancer. When a plurality of markers is used, it is preferred that 2, 3, 4, 5, 8, 10, 12, 15, 20, 30, or 50 or more individual markers be used, wherein fewer markers are preferred.

In order to maximize the sensitivity of the compositions, kits, and methods of the invention (*i.e.* by interference attributable to cells of non-ovarian origin in a patient sample), it is preferable that the marker of the invention used therein be a marker which has a restricted tissue distribution, *e.g.*, normally not expressed in a non-epithelial tissue, and more preferably a marker which is normally not expressed in a non-ovarian tissue.

Only a small number of markers are known to be associated with ovarian cancers (*e.g. AKT2, Ki-RAS, ERBB2, c-MYC, RB1*, and *TP53*; Lynch, *supra*). These markers are not, of course, included among the markers of the invention, although they may be used together with one or more markers of the invention in a panel of markers, for example. It is well known that certain types of genes, such as oncogenes, tumor suppressor genes, growth factor-like genes, protease-like genes, and protein kinase-like genes are often involved with development of cancers of various types. Thus, among the markers of the invention, use of those which correspond to proteins which resemble known proteins encoded by known oncogenes and tumor suppressor genes, and those which correspond to proteins which resemble growth factors, proteases, and protein kinases are preferred.

Known oncogenes and tumor suppressor genes include, for example, *abl, abr, akt2, apc, bcl2α, bcl2β, bcl3, bcr, brca1, brca2, cbl, ccnd1, cdc42, cdk4, crk- II, csf1r/fms, dbl, dcc, dpc4/smad4, e-cad, e2f1/rbap, egfr/erbb-1, elk1, elk3, eph, erg, ets1, ets2, fer, fgr/src2, fli1/ergb2, fos, fps/fes, fra1, fra2, fyn, hck, hek, her2/erbb- 2/neu, her3/erbb-3, her4/erbb-4, hras1, hst2, hstf1, igfbp2, ink4a, ink4b, int2/fgf3, jun, junb, jund, kip2, kit, kras2a, kras2b, lck, lyn, mas, max, mcc, mdm2, met, mlh1, mmp10, mos, msh2, msh3, msh6, myb, myba, mybb, myc, mycl1, mycn, nf1, nf2, nme2, nras, p53, pdgfb, phb, pim1, pms1, pms2, ptc, pten, raf1, rap1a, rb1, rel, ret, ros1, ski, src1, tal1, tgfbr2, tgfb3, tgfbr3, thra1, thrb, tiam1, timp3, tjp1, tp53, trk, vav, vhl, vil2, waf1, wnt1, wnt2, wt1*, and *yes1* (Hesketh, 1997, In: *The Oncogene and Tumour Suppressor Gene Facts Book*, 2nd Ed., Academic Press; Fishel *et al.*, 1994, *Science* 266:1403-1405).

Known growth factors include platelet-derived growth factor alpha, platelet-derived growth factor beta (simian sarcoma viral {v-sis} oncogene homolog), thrombopoietin (myeloproliferative leukemia virus oncogene ligand, megakaryocyte growth and development factor), erythropoietin, B cell growth factor, macrophage stimulating factor 1 (hepatocyte growth factor-like protein), hepatocyte growth factor (hepapoietin A), insulin-like growth factor 1 (somatomedia C), hepatoma-derived growth factor, amphiregulin (schwannoma-derived growth factor), bone morphogenetic proteins 1, 2, 3, 3 beta, and 4, bone morphogenetic protein 7 (osteogenic protein 1), bone morphogenetic protein 8 (osteogenic protein 2), connective tissue growth factor, connective tissue activation peptide 3, epidermal growth factor (EGF), teratocarcinoma-derived growth factor 1, endothelin, endothelin 2, endothelin 3, stromal cell-derived

factor 1, vascular endothelial growth factor (VEGF), VEGF-B, VEGF-C, placental growth factor (vascular endothelial growth factor-related protein), transforming growth factor alpha, transforming growth factor beta 1 and its precursors, transforming growth factor beta 2 and its precursors, fibroblast growth factor 1 (acidic), fibroblast growth factor 2 (basic), fibroblast growth factor 5 and its precursors, fibroblast growth factor 6 and its precursors, fibroblast growth factor 7 (keratinocyte growth factor), fibroblast growth factor 8 (androgen-induced), fibroblast growth factor 9 (glia-activating factor), pleiotrophin (heparin binding growth factor 8, neurite growth-promoting factor 1), brain-derived neurotrophic factor, and recombinant glial growth factor 2.

Known proteases include interleukin-1 beta convertase and its precursors, Mch6 and its precursors, Mch2 isoform alpha, Mch4, Cpp32 isoform alpha, Lice2 gamma cysteine protease, Ich-1S, Ich-1L, Ich-2 and its precursors, TY protease, matrix metalloproteinase 1 (interstitial collagenase), matrix metalloproteinase 2 (gelatinase A, 72kD gelatinase, 72kD type IV collagenase), matrix metalloproteinase 7 (matrilysin), matrix metalloproteinase 8 (neutrophil collagenase), matrix metalloproteinase 12 (macrophage elastase), matrix metalloproteinase 13 (collagenase 3), metallopeptidase 1, cysteine-rich metalloprotease (disintegrin) and its precursors, subtilisin-like protease Pc8 and its precursors, chymotrypsin, snake venom-like protease, cathepsin l, cathepsin D (lysosomal aspartyl protease), stromelysin, aminopeptidase N, plasminogen, tissue plasminogen activator, plasminogen activator inhibitor type II, and urokinase-type plasminogen activator.

Known protein kinases include DAP kinase, serine/threonine protein kinases NIK, PK428, Krs-2, SAK, and EMK, interferon-inducible double stranded RNA dependent protein kinase, FAST kinase, AIM1, IPL1-like midbody-associated protein kinase-1, NIMA-like protein kinase 1 (NLK1), the cyclin-dependent kinases (cdk1-10), checkpoint kinase Chk1, Nek3 protein kinase, BMK1 beta kinase, Clk1, Clk2, Clk3, extracellular signal-regulated kinases 1, 3, and 6, cdc28 protein kinase 1, cdc28 protein kinase 2, pLK, Myt1, c-Jun N-terminal kinase 2, Cam kinase 1, the MAP kinases, insulin-stimulated protein kinase 1, beta-adrenergic receptor kinase 2, ribosomal protein S6 kinase, kinase suppressor of ras-1 (KSR1), putative serine/threonine protein kinase Prk, PkB kinase, cAMP-dependent protein kinase, cGMP-dependent protein kinase, type II cGMP-dependent protein kinase, protein kinases Dyrk2, Dyrk3, and Dyrk4, Rho-

associated coiled-coil containing protein kinase p160ROCK, protein tyrosine kinase t-Ror1, Ste20-related kinases, cell adhesion kinase beta, protein kinase 3, stress-activated protein kinase 4, protein kinase Zpk, serine kinase hPAK65, dual specificity mitogen-activated protein kinases 1 and 2, casein kinase I gamma 2, p21-activated protein kinase Pak1, lipid-activated protein kinase PRK2, focal adhesion kinase, dual-specificity tyrosine-phosphorylation regulated kinase, myosin light chain kinase, serine kinases SRPK2, TESK1, and VRK2, B lymphocyte serine/threonine protein kinase, stress-activated protein kinases JNK1 and JNK2, phosphorylase kinase, protein tyrosine kinase Tec, Jak2 kinase, protein kinase Ndr, MEK kinase 3, SHB adaptor protein (a Src homology 2 protein), agammaglobulinaemia protein-tyrosine kinase (Atk), protein kinase ATR, guanylate kinase 1, thrombopoeitin receptor and its precursors, DAG kinase epsilon, and kinases encoded by oncogenes or viral oncogenes such as v-fgr (Gardner-Rasheed), v-abl (Abelson murine leukemia viral oncogene homolog 1), v-arg (Abelson murine leukemia viral oncogene homolog, Abelson-related gene), v-fes and v-fps (feline sarcoma viral oncogene and Fujinami avian sarcoma viral oncogene homologs), proto-oncogene c-*cot*, oncogene *pim*-1, and oncogene *mas1*.

Previously known proteins (and, of course, the genes, transcripts, mRNAs, etc. corresponding to those proteins) designated NES1, HE4, and neurosin, are included as markers. NES1 protein is also known as protease serine-like 1 and normal epithelial cell-specific protein, and has been assigned Swiss-Prot accession number O43240 and GenBank accession number AF024605. The amino acid sequence of NES1 protein and the nucleotide sequence of a cDNA encoding it have also been described in U.S. Patent 5,736,377. Association of NES1 protein expression and occurrence of cancer has been described, for example, in U.S. Patent 5,843,694. However, these references (and others, *e.g.* Liu *et al.*, 1996, *Cancer Res.* 56:3371-3379; Luo *et al.*, 1998, *Biochem. Biophys. Res. Comm.* 247:580-586; Goyal *et al.*, 1998, *Cancer Res.* 58:4782-4786) indicate that NES1 expression is down-regulated in cancer patients. In contrast, the present inventors have discovered that NES1 expression is up- regulated in ovarian cancer samples (*e.g.* in later stage {*i.e.* stage 3 or 4} ovarian cancer cell lines).

HE4 protein is also known as major epididymis-specific protein E4 and epididymal secretory protein E4, and has been assigned Swiss-Prot accession number Q14508 and GenBank accession number X63187. The amino acid sequence and the

corresponding cDNA nucleotide sequence were also disclosed in Kirchhoff *et al.* (1991) *Biol. Reprod.* 45:350-357. A possible association between expression of HE4 and occurrence of ovarian cancer was disclosed, for example in Wang *et al.* (1999) *Gene* 229:101-108.

Neurosin is also known as protease M, zyme, and SP59, and has been assigned Swiss-Prot accession number Q92876 and GenBank accession number U62801. The amino acid sequence of neurosin and the corresponding cDNA nucleotide sequence were also disclosed in Anisowicz *et al.* (1996) *Mol. Med.* 2:624-636. The same reference discloses a possible association between expression of neurosin and occurrence of ovarian cancer.

It is recognized that the compositions, kits, and methods of the invention will be of particular utility to patients having an enhanced risk of developing ovarian cancer and their medical advisors. Patients recognized as having an enhanced risk of developing ovarian cancer include, for example, patients having a familial history of ovarian cancer, patients identified as having a mutant oncogene (*i.e.* at least one allele), and patients of advancing age (*i.e.* women older than about 50 or 60 years).

The level of expression of a marker in normal (*i.e.* non-cancerous) human ovarian tissue can be assessed in a variety of ways. In one embodiment, this normal level of expression is assessed by assessing the level of expression of the marker in a portion of ovarian cells which appears to be non-cancerous and by comparing this normal level of expression with the level of expression in a portion of the ovarian cells which is suspected of being cancerous. For example, when laparoscopy or other medical procedure, reveals the presence of a lump on one portion of a patient's ovary, but not on another portion of the same ovary or on the other ovary, the normal level of expression of a marker may be assessed using one or both or the non-affected ovary and a non-affected portion of the affected ovary, and this normal level of expression may be compared with the level of expression of the same marker in an affected portion (*i.e.* the lump) of the affected ovary. Alternately, and particularly as further information becomes available as a result of routine performance of the methods described herein, population-average values for normal expression of the markers of the invention may be used. In other embodiments, the 'normal' level of expression of a marker may be determined by assessing expression of the marker in a patient sample obtained from a

non-cancer-afflicted patient, from a patient sample obtained from a patient before the suspected onset of ovarian cancer in the patient, from archived patient samples, and the like.

The invention includes compositions, kits, and methods for assessing the presence of ovarian cancer cells in a sample (*e.g.* an archived tissue sample or a sample obtained from a patient). These compositions, kits, and methods are substantially the same as those described above, except that, where necessary, the compositions, kits, and methods are adapted for use with samples other than patient samples. For example, when the sample to be used is a parafinized, archived human tissue sample, it can be necessary to adjust the ratio of compounds in the compositions of the invention, in the kits of the invention, or the methods used to assess levels of marker expression in the sample. Such methods are well known in the art and within the skill of the ordinary artisan.

The invention includes a kit for assessing the presence of ovarian cancer cells (*e.g.* in a sample such as a patient sample). The kit comprises a plurality of reagents, each of which is capable of binding specifically with a nucleic acid or polypeptide corresponding to a marker of the invention. Suitable reagents for binding with a polypeptide corresponding to a marker of the invention include antibodies, antibody derivatives, antibody fragments, and the like. Suitable reagents for binding with a nucleic acid (*e.g.* a genomic DNA, an mRNA, a spliced mRNA, a cDNA, or the like) include complementary nucleic acids. For example, the nucleic acid reagents may include oligonucleotides (labeled or non-labeled) fixed to a substrate, labeled oligonucleotides not bound with a substrate, pairs of PCR primers, molecular beacon probes, and the like.

The kit of the invention may optionally comprise additional components useful for performing the methods of the invention. By way of example, the kit may comprise fluids (*e.g.* SSC buffer) suitable for annealing complementary nucleic acids or for binding an antibody with a protein with which it specifically binds, one or more sample compartments, an instructional material which describes performance of a method of the invention, a sample of normal ovarian cells, a sample of ovarian cancer cells, and the like.

The invention also includes a method of making an isolated hybridoma which produces an antibody useful for assessing whether patient is afflicted with an ovarian cancer. In this method, a protein corresponding to a marker of the invention or a fragment of the protein is isolated (*e.g.* by purification from a cell in which it is expressed or by transcription and translation of a nucleic acid encoding the protein *in vivo* or *in vitro* using known methods). A vertebrate, preferably a mammal such as a mouse, rat, rabbit, or sheep, is immunized using the isolated protein or fragment thereof. The vertebrate may optionally (and preferably) be immunized at least one additional time with the isolated protein or fragment, so that the vertebrate exhibits a robust immune response to the protein. Splenocytes are isolated from the immunized vertebrate and fused with an immortalized cell line to form hybridomas, using any of a variety of methods well known in the art. Hybridomas formed in this manner are then screened using standard methods to identify one or more hybridomas which produce an antibody which specifically binds with the protein. The invention also includes hybridomas made by this method and antibodies made using such hybridomas. An antibody of the invention may also be used as a therapeutic agent for treating cancers, particularly ovarian cancers (see *e.g.*, Table 8).

The invention also includes a method of assessing the efficacy of a test compound for inhibiting ovarian cancer cells. As described above, differences in the level of expression of the markers of the invention correlate with the cancerous state of ovarian cells. Although it is recognized that changes in the levels of expression of certain of the markers of the invention likely result from the cancerous state of ovarian cells, it is likewise recognized that changes in the levels of expression of other of the markers of the invention induce, maintain, and promote the cancerous state of those cells. Thus, compounds which inhibit an ovarian cancer in a patient will cause the level of expression of one or more of the markers of the invention to change to a level nearer the normal level of expression for that marker (*i.e.* the level of expression for the marker in non-cancerous ovarian cells).

This method thus comprises comparing expression of a marker in a first ovarian cell sample and maintained in the presence of the test compound and expression of the marker in a second ovarian cell sample and maintained in the absence of the test compound. A significant increase in the level of expression of a marker listed in Table

3A, 5, 7C and/or 7E, or a significant decrease in the level of expression of a marker listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and/or 8, is an indication that the test compound inhibits ovarian cancer. The ovarian cell samples may, for example, be aliquots of a single sample of normal ovarian cells obtained from a patient, pooled samples of normal ovarian cells obtained from a patient, cells of a normal ovarian cell line, aliquots of a single sample of ovarian cancer cells obtained from a patient, pooled samples of ovarian cancer cells obtained from a patient, cells of an ovarian cancer cell line, or the like. In one embodiment, the samples are ovarian cancer cells obtained from a patient and a plurality of compounds known to be effective for inhibiting various ovarian cancers are tested in order to identify the compound which is likely to best inhibit the ovarian cancer in the patient.

This method may likewise be used to assess the efficacy of a therapy for inhibiting ovarian cancer in a patient. In this method, the level of expression of one or more markers of the invention in a pair of samples (one subjected to the therapy, the other not subjected to the therapy) is assessed. As with the method of assessing the efficacy of test compounds, if the therapy induces a significant decrease in the level of expression of a marker listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and/or 8, or blocks induction of a marker listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and/or 8, or if the therapy induces a significant enhancement of the level of expression of a marker listed in Tables 3A, 5, 7C and 7E, then the therapy is efficacious for inhibiting ovarian cancer. As above, if samples from a selected patient are used in this method, then alternative therapies can be assessed *in vitro* in order to select a therapy most likely to be efficacious for inhibiting ovarian cancer in the patient.

As described herein, ovarian cancer in patients is associated with an increase in the level of expression of one or more markers listed in either or both of Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and/or 8, with a decrease in the level of expression of one or more markers listed in Table 3A, 5, 7C and 7E, or with both. While, as discussed above, some of these changes in expression level result from occurrence of the ovarian cancer, others of these changes induce, maintain, and promote the cancerous state of ovarian cancer cells. Thus, ovarian cancer characterized by an increase in the level of expression of one or more markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and/or 8 can be inhibited by inhibiting expression of those markers. Likewise, ovarian

cancer characterized by a decrease in the level of expression of one or more markers listed in Table 3A, 5, 7C and 7E can be inhibited by enhancing expression of those markers.

Expression of a marker listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8 can be inhibited in a number of ways generally known in the art. For example, an antisense oligonucleotide can be provided to the ovarian cancer cells in order to inhibit transcription, translation, or both, of the marker(s). Alternately, a polynucleotide encoding an antibody, an antibody derivative, or an antibody fragment which specifically binds the protein corresponding to the marker, and operably linked with an appropriate promoter/regulator region, can be provided to the cell in order to generate intracellular antibodies which will inhibit the function or activity of the protein. The expression and/or function of a marker may also be inhibited by treating the ovarian cancer cell with a heterologous antibody or antibody derivative that specifically binds the protein corresponding to the marker. Using the methods described herein, a variety of molecules, particularly including molecules sufficiently small that they are able to cross the cell membrane, can be screened in order to identify molecules which inhibit expression of the marker(s). The compound so identified can be provided to the patient in order to inhibit expression of the marker(s) in the ovarian cancer cells of the patient.

Expression of a marker listed in Tables 3A, 5, 7C and 7E can be enhanced in a number of ways generally known in the art. For example, a polynucleotide encoding the marker and operably linked with an appropriate promoter/regulator region can be provided to ovarian cancer cells of the patient in order to induce enhanced expression of the protein (and mRNA) corresponding to the marker therein. Alternatively, if the protein is capable of crossing the cell membrane, inserting itself in the cell membrane, or is normally a secreted protein, then expression of the protein can be enhanced by providing the protein (*e.g.* directly or by way of the bloodstream or another ovary-associated fluid) to ovarian cancer cells in the patient.

As described above, the cancerous state of human ovarian cells is correlated with changes in the levels of expression of the markers of the invention. Thus, compounds which induce increased expression of one or more of the markers listed in either or both of Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8, decreased expression of one or more of the markers listed in either or both of Tables 3A, 5, 7C and 7E, or both, can induce

ovarian cell carcinogenesis. The invention includes a method for assessing the human ovarian cell carcinogenic potential of a test compound. This method comprises maintaining separate aliquots of human ovarian cells in the presence and absence of the test compound. Expression of a marker of the invention in each of the aliquots is compared. A significant increase in the level of expression of a marker listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8, or a significant decrease in the level of expression of a marker listed in Tables 3A, 5, 7C and 7E in the aliquot maintained in the presence of the test compound (relative to the aliquot maintained in the absence of the test compound) is an indication that the test compound possesses human ovarian cell carcinogenic potential. The relative carcinogenic potentials of various test compounds can be assessed by comparing the degree of enhancement or inhibition of the level of expression of the relevant markers, by comparing the number of markers for which the level of expression is enhanced or inhibited, or by comparing both.

Various aspects of the invention are described in further detail in the following subsections.

I. Isolated Nucleic Acid Molecules

One aspect of the invention pertains to isolated nucleic acid molecules that correspond to a marker of the invention, including nucleic acids which encode a polypeptide corresponding to a marker of the invention or a portion of such a polypeptide. Isolated nucleic acids of the invention also include nucleic acid molecules sufficient for use as hybridization probes to identify nucleic acid molecules that correspond to a marker of the invention, including nucleic acids which encode a polypeptide corresponding to a marker of the invention, and fragments of such nucleic acid molecules, *e.g.*, those suitable for use as PCR primers for the amplification or mutation of nucleic acid molecules. As used herein, the term "nucleic acid molecule" is intended to include DNA molecules (*e.g.*, cDNA or genomic DNA) and RNA molecules (*e.g.*, mRNA) and analogs of the DNA or RNA generated using nucleotide analogs. The nucleic acid molecule can be single-stranded or double-stranded, but preferably is double-stranded DNA.

An "isolated" nucleic acid molecule is one which is separated from other nucleic acid molecules which are present in the natural source of the nucleic acid molecule. Preferably, an "isolated" nucleic acid molecule comprises a protein-coding sequence and is free of sequences which naturally flank the coding sequence in the genomic DNA of the organism from which the nucleic acid is derived. For example, in various embodiments, the isolated nucleic acid molecule can contain less than about 5 kB, 4 kB, 3 kB, 2 kB, 1 kB, 0.5 kB or 0.1 kB of nucleotide sequences which naturally flank the nucleic acid molecule in genomic DNA of the cell from which the nucleic acid is derived. Moreover, an "isolated" nucleic acid molecule, such as a cDNA molecule, can be substantially free of other cellular material, or culture medium when produced by recombinant techniques, or substantially free of chemical precursors or other chemicals when chemically synthesized.

A nucleic acid molecule of the present invention, *e.g.*, a nucleic acid encoding a protein corresponding to a marker listed in one or more of Tables 1-11, can be isolated using standard molecular biology techniques and the sequence information in the database records described herein. Using all or a portion of such nucleic acid sequences, nucleic acid molecules of the invention can be isolated using standard hybridization and cloning techniques (*e.g.*, as described in Sambrook *et al.*, ed., *Molecular Cloning: A Laboratory Manual, 2nd ed.*, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, 1989).

A nucleic acid molecule of the invention can be amplified using cDNA, mRNA, or genomic DNA as a template and appropriate oligonucleotide primers according to standard PCR amplification techniques. The nucleic acid so amplified can be cloned into an appropriate vector and characterized by DNA sequence analysis. Furthermore, oligonucleotides corresponding to all or a portion of a nucleic acid molecule of the invention can be prepared by standard synthetic techniques, *e.g.*, using an automated DNA synthesizer.

In another preferred embodiment, an isolated nucleic acid molecule of the invention comprises a nucleic acid molecule which has a nucleotide sequence complementary to the nucleotide sequence of a nucleic acid corresponding to a marker of the invention or to the nucleotide sequence of a nucleic acid encoding a protein which corresponds to a marker of the invention. A nucleic acid molecule which is

complementary to a given nucleotide sequence is one which is sufficiently complementary to the given nucleotide sequence that it can hybridize to the given nucleotide sequence thereby forming a stable duplex.

Moreover, a nucleic acid molecule of the invention can comprise only a portion of a nucleic acid sequence, wherein the full length nucleic acid sequence comprises a marker of the invention or which encodes a polypeptide corresponding to a marker of the invention. Such nucleic acids can be used, for example, as a probe or primer. The probe/primer typically is used as one or more substantially purified oligonucleotides. The oligonucleotide typically comprises a region of nucleotide sequence that hybridizes under stringent conditions to at least about 7, preferably about 15, more preferably about 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, or 400 or more consecutive nucleotides of a nucleic acid of the invention.

Probes based on the sequence of a nucleic acid molecule of the invention can be used to detect transcripts or genomic sequences corresponding to one or more markers of the invention. The probe comprises a label group attached thereto, *e.g.*, a radioisotope, a fluorescent compound, an enzyme, or an enzyme co-factor. Such probes can be used as part of a diagnostic test kit for identifying cells or tissues which mis-express the protein, such as by measuring levels of a nucleic acid molecule encoding the protein in a sample of cells from a subject, *e.g.*, detecting mRNA levels or determining whether a gene encoding the protein has been mutated or deleted.

The invention further encompasses nucleic acid molecules that differ, due to degeneracy of the genetic code, from the nucleotide sequence of nucleic acids encoding a protein which corresponds to a marker of the invention, and thus encode the same protein.

In addition to the nucleotide sequences described in the GenBank and IMAGE Consortium database records described herein, it will be appreciated by those skilled in the art that DNA sequence polymorphisms that lead to changes in the amino acid sequence can exist within a population (*e.g.*, the human population). Such genetic polymorphisms can exist among individuals within a population due to natural allelic variation. An allele is one of a group of genes which occur alternatively at a given genetic locus. In addition, it will be appreciated that DNA polymorphisms that affect

RNA expression levels can also exist that may affect the overall expression level of that gene (*e.g.*, by affecting regulation or degradation).

As used herein, the phrase "allelic variant" refers to a nucleotide sequence which occurs at a given locus or to a polypeptide encoded by the nucleotide sequence.

As used herein, the terms "gene" and "recombinant gene" refer to nucleic acid molecules comprising an open reading frame encoding a polypeptide corresponding to a marker of the invention. Such natural allelic variations can typically result in 0.1 –0.5 % variance in the nucleotide sequence of a given gene. Alternative alleles can be identified by sequencing the gene of interest in a number of different individuals. This can be readily carried out by using hybridization probes to identify the same genetic locus in a variety of individuals. Any and all such nucleotide variations and resulting amino acid polymorphisms or variations that are the result of natural allelic variation and that do not alter the functional activity are intended to be within the scope of the invention.

In another embodiment, an isolated nucleic acid molecule of the invention is at least 7, 15, 20, 25, 30, 40, 60, 80, 100, 150, 200, 250, 300, 350, 400, 450, 550, 650, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000, 2200, 2400, 2600, 2800, 3000, 3500, 4000, 4500, or more nucleotides in length and hybridizes under stringent conditions to a nucleic acid corresponding to a marker of the invention or to a nucleic acid encoding a protein corresponding to a marker of the invention. As used herein, the term "hybridizes under stringent conditions" is intended to describe conditions for hybridization and washing under which nucleotide sequences at least 75% (80%, 85%, preferably 90%) identical to each other typically remain hybridized to each other. Such stringent conditions are known to those skilled in the art and can be found in sections 6.3.1-6.3.6 of *Current Protocols in Molecular Biology*, John Wiley & Sons, N.Y. (1989). A preferred, non-limiting example of stringent hybridization conditions for annealing two single-stranded DNA each of which is at least about 100 bases in length and/or for annealing a single-stranded DNA and a single-stranded RNA each of which is at least about 100 bases in length, are hybridization in 6X sodium chloride/sodium citrate (SSC) at about 45°C, followed by one or more washes in 0.2X SSC, 0.1% SDS at 50-65°C. Further preferred hybridization conditions are taught in Lockhart, *et al.*, Nature Biotechnology, Volume 14, 1996 August:1675-1680; Breslauer, *et al.*, Proc. Natl. Acad.

Sci. USA, Volume 83, 1986 June: 3746-3750; Van Ness, *et al.*, Nucleic Acids Research, Volume 19, No. 19, 1991 September: 5143-5151; McGraw, *et al.*, BioTechniques, Volume 8, No. 6 1990: 674-678; and Milner, *et al.*, Nature Biotechnology, Volume 15, 1997 June: 537-541, all expressly incorporated by reference.

In addition to naturally-occurring allelic variants of a nucleic acid molecule of the invention that can exist in the population, the skilled artisan will further appreciate that sequence changes can be introduced by mutation thereby leading to changes in the amino acid sequence of the encoded protein, without altering the biological activity of the protein encoded thereby. For example, one can make nucleotide substitutions leading to amino acid substitutions at "non-essential" amino acid residues. A "non-essential" amino acid residue is a residue that can be altered from the wild-type sequence without altering the biological activity, whereas an "essential" amino acid residue is required for biological activity. For example, amino acid residues that are not conserved or only semi-conserved among homologs of various species may be non-essential for activity and thus would be likely targets for alteration. Alternatively, amino acid residues that are conserved among the homologs of various species (*e.g.*, murine and human) may be essential for activity and thus would not be likely targets for alteration.

Accordingly, another aspect of the invention pertains to nucleic acid molecules encoding a polypeptide of the invention that contain changes in amino acid residues that are not essential for activity. Such polypeptides differ in amino acid sequence from the naturally-occurring proteins which correspond to the markers of the invention, yet retain biological activity. In one embodiment, such a protein has an amino acid sequence that is at least about 40% identical, 50%, 60%, 70%, 80%, 90%, 95%, or 98% identical to the amino acid sequence of one of the proteins which correspond to the markers of the invention.

An isolated nucleic acid molecule encoding a variant protein can be created by introducing one or more nucleotide substitutions, additions or deletions into the nucleotide sequence of nucleic acids of the invention, such that one or more amino acid residue substitutions, additions, or deletions are introduced into the encoded protein. Mutations can be introduced by standard techniques, such as site-directed mutagenesis and PCR-mediated mutagenesis. Preferably, conservative amino acid substitutions are

made at one or more predicted non-essential amino acid residues. A "conservative amino acid substitution" is one in which the amino acid residue is replaced with an amino acid residue having a similar side chain. Families of amino acid residues having similar side chains have been defined in the art. These families include amino acids with basic side chains (*e.g.*, lysine, arginine, histidine), acidic side chains (*e.g.*, aspartic acid, glutamic acid), uncharged polar side chains (*e.g.*, glycine, asparagine, glutamine, serine, threonine, tyrosine, cysteine), non-polar side chains (*e.g.*, alanine, valine, leucine, isoleucine, proline, phenylalanine, methionine, tryptophan), beta-branched side chains (*e.g.*, threonine, valine, isoleucine) and aromatic side chains (*e.g.*, tyrosine, phenylalanine, tryptophan, histidine). Alternatively, mutations can be introduced randomly along all or part of the coding sequence, such as by saturation mutagenesis, and the resultant mutants can be screened for biological activity to identify mutants that retain activity. Following mutagenesis, the encoded protein can be expressed recombinantly and the activity of the protein can be determined.

The present invention encompasses antisense nucleic acid molecules, *i.e.*, molecules which are complementary to a sense nucleic acid of the invention, *e.g.*, complementary to the coding strand of a double-stranded cDNA molecule corresponding to a marker of the invention or complementary to an mRNA sequence corresponding to a marker of the invention. Accordingly, an antisense nucleic acid of the invention can hydrogen bond to (*i.e.* anneal with) a sense nucleic acid of the invention. The antisense nucleic acid can be complementary to an entire coding strand, or to only a portion thereof, *e.g.*, all or part of the protein coding region (or open reading frame). An antisense nucleic acid molecule can also be antisense to all or part of a non-coding region of the coding strand of a nucleotide sequence encoding a polypeptide of the invention. The non-coding regions ("5' and 3' untranslated regions") are the 5' and 3' sequences which flank the coding region and are not translated into amino acids.

An antisense oligonucleotide can be, for example, about 5, 10, 15, 20, 25, 30, 35, 40, 45, or 50 or more nucleotides in length. An antisense nucleic acid of the invention can be constructed using chemical synthesis and enzymatic ligation reactions using procedures known in the art. For example, an antisense nucleic acid (*e.g.*, an antisense oligonucleotide) can be chemically synthesized using naturally occurring nucleotides or variously modified nucleotides designed to increase the biological stability of the

molecules or to increase the physical stability of the duplex formed between the antisense and sense nucleic acids, *e.g.*, phosphorothioate derivatives and acridine substituted nucleotides can be used. Examples of modified nucleotides which can be used to generate the antisense nucleic acid include 5-fluorouracil, 5-bromouracil, 5-chlorouracil, 5-iodouracil, hypoxanthine, xanthine, 4-acetylcytosine, 5-(carboxyhydroxylmethyl) uracil, 5-carboxymethylaminomethyl-2-thiouridine, 5-carboxymethylaminomethyluracil, dihydrouracil, beta-D-galactosylqueosine, inosine, N6-isopentenyladenine, 1-methylguanine, 1-methylinosine, 2,2-dimethylguanine, 2-methyladenine, 2-methylguanine, 3-methylcytosine, 5-methylcytosine, N6-adenine, 7-methylguanine, 5-methylaminomethyluracil, 5-methoxyaminomethyl-2-thiouracil, beta-D-mannosylqueosine, 5'-methoxycarboxymethyluracil, 5-methoxyuracil, 2-methylthio-N6-isopentenyladenine, uracil-5-oxyacetic acid (v), wybutoxosine, pseudouracil, queosine, 2-thiocytosine, 5-methyl-2-thiouracil, 2-thiouracil, 4-thiouracil, 5-methyluracil, uracil-5-oxyacetic acid methylester, uracil-5-oxyacetic acid (v), 5-methyl-2-thiouracil, 3-(3-amino-3-N-2-carboxypropyl) uracil, (acp3)w, and 2,6-diaminopurine. Alternatively, the antisense nucleic acid can be produced biologically using an expression vector into which a nucleic acid has been sub-cloned in an antisense orientation (*i.e.*, RNA transcribed from the inserted nucleic acid will be of an antisense orientation to a target nucleic acid of interest, described further in the following subsection).

The antisense nucleic acid molecules of the invention are typically administered to a subject or generated *in situ* such that they hybridize with or bind to cellular mRNA and/or genomic DNA encoding a polypeptide corresponding to a selected marker of the invention to thereby inhibit expression of the marker, *e.g.*, by inhibiting transcription and/or translation. The hybridization can be by conventional nucleotide complementarity to form a stable duplex, or, for example, in the case of an antisense nucleic acid molecule which binds to DNA duplexes, through specific interactions in the major groove of the double helix. Examples of a route of administration of antisense nucleic acid molecules of the invention includes direct injection at a tissue site or infusion of the antisense nucleic acid into an ovary-associated body fluid. Alternatively, antisense nucleic acid molecules can be modified to target selected cells and then administered systemically. For example, for systemic administration, antisense

molecules can be modified such that they specifically bind to receptors or antigens expressed on a selected cell surface, *e.g.*, by linking the antisense nucleic acid molecules to peptides or antibodies which bind to cell surface receptors or antigens. The antisense nucleic acid molecules can also be delivered to cells using the vectors described herein. To achieve sufficient intracellular concentrations of the antisense molecules, vector constructs in which the antisense nucleic acid molecule is placed under the control of a strong pol II or pol III promoter are preferred.

An antisense nucleic acid molecule of the invention can be an α-anomeric nucleic acid molecule. An α-anomeric nucleic acid molecule forms specific double-stranded hybrids with complementary RNA in which, contrary to the usual α-units, the strands run parallel to each other (Gaultier *et al.*, 1987, *Nucleic Acids Res.* 15:6625-6641). The antisense nucleic acid molecule can also comprise a 2'-o-methylribonucleotide (Inoue *et al.*, 1987, *Nucleic Acids Res.* 15:6131-6148) or a chimeric RNA-DNA analogue (Inoue *et al.*, 1987, *FEBS Lett.* 215:327-330).

The invention also encompasses ribozymes. Ribozymes are catalytic RNA molecules with ribonuclease activity which are capable of cleaving a single-stranded nucleic acid, such as an mRNA, to which they have a complementary region. Thus, ribozymes (*e.g.*, hammerhead ribozymes as described in Haselhoff and Gerlach, 1988, *Nature* 334:585-591) can be used to catalytically cleave mRNA transcripts to thereby inhibit translation of the protein encoded by the mRNA. A ribozyme having specificity for a nucleic acid molecule encoding a polypeptide corresponding to a marker of the invention can be designed based upon the nucleotide sequence of a cDNA corresponding to the marker. For example, a derivative of a *Tetrahymena* L-19 IVS RNA can be constructed in which the nucleotide sequence of the active site is complementary to the nucleotide sequence to be cleaved (see Cech *et al.* U.S. Patent No. 4,987,071; and Cech *et al.* U.S. Patent No. 5,116,742). Alternatively, an mRNA encoding a polypeptide of the invention can be used to select a catalytic RNA having a specific ribonuclease activity from a pool of RNA molecules (see, *e.g.*, Bartel and Szostak, 1993, *Science* 261:1411-1418).

The invention also encompasses nucleic acid molecules which form triple helical structures. For example, expression of a polypeptide of the invention can be inhibited by targeting nucleotide sequences complementary to the regulatory region of the gene

encoding the polypeptide (*e.g.*, the promoter and/or enhancer) to form triple helical structures that prevent transcription of the gene in target cells. See generally Helene (1991) *Anticancer Drug Des.* 6(6):569-84; Helene (1992) *Ann. N.Y. Acad. Sci.* 660:27-36; and Maher (1992) *Bioassays* 14(12):807-15.

In various embodiments, the nucleic acid molecules of the invention can be modified at the base moiety, sugar moiety or phosphate backbone to improve, *e.g.*, the stability, hybridization, or solubility of the molecule. For example, the deoxyribose phosphate backbone of the nucleic acids can be modified to generate peptide nucleic acids (see Hyrup *et al.*, 1996, *Bioorganic & Medicinal Chemistry* 4(1): 5-23). As used herein, the terms "peptide nucleic acids" or "PNAs" refer to nucleic acid mimics, *e.g.*, DNA mimics, in which the deoxyribose phosphate backbone is replaced by a pseudopeptide backbone and only the four natural nucleobases are retained. The neutral backbone of PNAs has been shown to allow for specific hybridization to DNA and RNA under conditions of low ionic strength. The synthesis of PNA oligomers can be performed using standard solid phase peptide synthesis protocols as described in Hyrup *et al.* (1996), *supra*; Perry-O'Keefe *et al.* (1996) *Proc. Natl. Acad. Sci. USA* 93:14670-675.

PNAs can be used in therapeutic and diagnostic applications. For example, PNAs can be used as antisense or antigene agents for sequence-specific modulation of gene expression by, *e.g.*, inducing transcription or translation arrest or inhibiting replication. PNAs can also be used, *e.g.*, in the analysis of single base pair mutations in a gene by, *e.g.*, PNA directed PCR clamping; as artificial restriction enzymes when used in combination with other enzymes, *e.g.*, S1 nucleases (Hyrup (1996), *supra*; or as probes or primers for DNA sequence and hybridization (Hyrup, 1996, *supra*; Perry-O'Keefe *et al.*, 1996, *Proc. Natl. Acad. Sci. USA* 93:14670-675).

In another embodiment, PNAs can be modified, *e.g.*, to enhance their stability or cellular uptake, by attaching lipophilic or other helper groups to PNA, by the formation of PNA-DNA chimeras, or by the use of liposomes or other techniques of drug delivery known in the art. For example, PNA-DNA chimeras can be generated which can combine the advantageous properties of PNA and DNA. Such chimeras allow DNA recognition enzymes, *e.g.*, RNASE H and DNA polymerases, to interact with the DNA portion while the PNA portion would provide high binding affinity and specificity.

PNA-DNA chimeras can be linked using linkers of appropriate lengths selected in terms of base stacking, number of bonds between the nucleobases, and orientation (Hyrup, 1996, *supra*). The synthesis of PNA-DNA chimeras can be performed as described in Hyrup (1996), *supra*, and Finn *et al.* (1996) *Nucleic Acids Res.* 24(17):3357-63. For example, a DNA chain can be synthesized on a solid support using standard phosphoramidite coupling chemistry and modified nucleoside analogs. Compounds such as 5'-(4-methoxytrityl)amino-5'-deoxy-thymidine phosphoramidite can be used as a link between the PNA and the 5' end of DNA (Mag *et al.*, 1989, *Nucleic Acids Res.* 17:5973-88). PNA monomers are then coupled in a step-wise manner to produce a chimeric molecule with a 5' PNA segment and a 3' DNA segment (Finn *et al.*, 1996, *Nucleic Acids Res.* 24(17):3357-63). Alternatively, chimeric molecules can be synthesized with a 5' DNA segment and a 3' PNA segment (Peterser *et al.*, 1975, *Bioorganic Med. Chem. Lett.* 5:1119-11124).

In other embodiments, the oligonucleotide can include other appended groups such as peptides (*e.g.*, for targeting host cell receptors *in vivo*), or agents facilitating transport across the cell membrane (see, *e.g.*, Letsinger *et al.*, 1989, *Proc. Natl. Acad. Sci. USA* 86:6553-6556; Lemaitre *et al.*, 1987, *Proc. Natl. Acad. Sci. USA* 84:648-652; PCT Publication No. WO 88/09810) or the blood-brain barrier (see, *e.g.*, PCT Publication No. WO 89/10134). In addition, oligonucleotides can be modified with hybridization-triggered cleavage agents (see, *e.g.*, Krol *et al.*, 1988, *Bio/Techniques* 6:958-976) or intercalating agents (see, *e.g.*, Zon, 1988, *Pharm. Res.* 5:539-549). To this end, the oligonucleotide can be conjugated to another molecule, *e.g.*, a peptide, hybridization triggered cross-linking agent, transport agent, hybridization-triggered cleavage agent, etc.

The invention also includes molecular beacon nucleic acids having at least one region which is complementary to a nucleic acid of the invention, such that the molecular beacon is useful for quantitating the presence of the nucleic acid of the invention in a sample. A "molecular beacon" nucleic acid is a nucleic acid comprising a pair of complementary regions and having a fluorophore and a fluorescent quencher associated therewith. The fluorophore and quencher are associated with different portions of the nucleic acid in such an orientation that when the complementary regions are annealed with one another, fluorescence of the fluorophore is quenched by the

quencher. When the complementary regions of the nucleic acid are not annealed with one another, fluorescence of the fluorophore is quenched to a lesser degree. Molecular beacon nucleic acids are described, for example, in U.S. Patent 5,876,930.

II. Isolated Proteins and Antibodies

One aspect of the invention pertains to isolated proteins which correspond to individual markers of the invention, and biologically active portions thereof, as well as polypeptide fragments suitable for use as immunogens to raise antibodies directed against a polypeptide corresponding to a marker of the invention. In one embodiment, the native polypeptide corresponding to a marker can be isolated from cells or tissue sources by an appropriate purification scheme using standard protein purification techniques. In another embodiment, polypeptides corresponding to a marker of the invention are produced by recombinant DNA techniques. Alternative to recombinant expression, a polypeptide corresponding to a marker of the invention can be synthesized chemically using standard peptide synthesis techniques.

An "isolated" or "purified" protein or biologically active portion thereof is substantially free of cellular material or other contaminating proteins from the cell or tissue source from which the protein is derived, or substantially free of chemical precursors or other chemicals when chemically synthesized. The language "substantially free of cellular material" includes preparations of protein in which the protein is separated from cellular components of the cells from which it is isolated or recombinantly produced. Thus, protein that is substantially free of cellular material includes preparations of protein having less than about 30%, 20%, 10%, or 5% (by dry weight) of heterologous protein (also referred to herein as a "contaminating protein"). When the protein or biologically active portion thereof is recombinantly produced, it is also preferably substantially free of culture medium, *i.e.*, culture medium represents less than about 20%, 10%, or 5% of the volume of the protein preparation. When the protein is produced by chemical synthesis, it is preferably substantially free of chemical precursors or other chemicals, *i.e.*, it is separated from chemical precursors or other chemicals which are involved in the synthesis of the protein. Accordingly such preparations of the protein have less than about 30%, 20%, 10%, 5% (by dry weight) of chemical precursors or compounds other than the polypeptide of interest.

Biologically active portions of a polypeptide corresponding to a marker of the invention include polypeptides comprising amino acid sequences sufficiently identical to or derived from the amino acid sequence of the protein corresponding to the marker (*e.g.*, the amino acid sequence listed in the GenBank and IMAGE Consortium database records described herein), which include fewer amino acids than the full length protein, and exhibit at least one activity of the corresponding full-length protein. Typically, biologically active portions comprise a domain or motif with at least one activity of the corresponding protein. A biologically active portion of a protein of the invention can be a polypeptide which is, for example, 10, 25, 50, 100 or more amino acids in length. Moreover, other biologically active portions, in which other regions of the protein are deleted, can be prepared by recombinant techniques and evaluated for one or more of the functional activities of the native form of a polypeptide of the invention.

Preferred polypeptides have the amino acid sequence listed in the one of the GenBank and IMAGE Consortium database records described herein. Other useful proteins are substantially identical (*e.g.*, at least about 40%, preferably 50%, 60%, 70%, 80%, 90%, 95%, or 99%) to one of these sequences and retain the functional activity of the protein of the corresponding naturally-occurring protein yet differ in amino acid sequence due to natural allelic variation or mutagenesis.

To determine the percent identity of two amino acid sequences or of two nucleic acids, the sequences are aligned for optimal comparison purposes (*e.g.*, gaps can be introduced in the sequence of a first amino acid or nucleic acid sequence for optimal alignment with a second amino or nucleic acid sequence). The amino acid residues or nucleotides at corresponding amino acid positions or nucleotide positions are then compared. When a position in the first sequence is occupied by the same amino acid residue or nucleotide as the corresponding position in the second sequence, then the molecules are identical at that position. The percent identity between the two sequences is a function of the number of identical positions shared by the sequences (*i.e.*, % identity = # of identical positions/total # of positions (*e.g.*, overlapping positions) x100). In one embodiment the two sequences are the same length.

The determination of percent identity between two sequences can be accomplished using a mathematical algorithm. A preferred, non-limiting example of a mathematical algorithm utilized for the comparison of two sequences is the algorithm of

Karlin and Altschul (1990) *Proc. Natl. Acad. Sci. USA* 87:2264-2268, modified as in Karlin and Altschul (1993) *Proc. Natl. Acad. Sci. USA* 90:5873-5877. Such an algorithm is incorporated into the NBLAST and XBLAST programs of Altschul, *et al.* (1990) *J. Mol. Biol.* 215:403-410. BLAST nucleotide searches can be performed with the NBLAST program, score = 100, wordlength = 12 to obtain nucleotide sequences homologous to a nucleic acid molecules of the invention. BLAST protein searches can be performed with the XBLAST program, score = 50, wordlength = 3 to obtain amino acid sequences homologous to a protein molecules of the invention. To obtain gapped alignments for comparison purposes, Gapped BLAST can be utilized as described in Altschul *et al.* (1997) *Nucleic Acids Res.* 25:3389-3402. Alternatively, PSI-Blast can be used to perform an iterated search which detects distant relationships between molecules. When utilizing BLAST, Gapped BLAST, and PSI-Blast programs, the default parameters of the respective programs (*e.g.*, XBLAST and NBLAST) can be used. See http://www.ncbi.nlm.nih.gov. Another preferred, non-limiting example of a mathematical algorithm utilized for the comparison of sequences is the algorithm of Myers and Miller, (1988) *Comput Appl Biosci,* 4:11-7. Such an algorithm is incorporated into the ALIGN program (version 2.0) which is part of the GCG sequence alignment software package. When utilizing the ALIGN program for comparing amino acid sequences, a PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4 can be used. Yet another useful algorithm for identifying regions of local sequence similarity and alignment is the FASTA algorithm as described in Pearson and Lipman (1988) *Proc. Natl. Acad. Sci. USA* 85:2444-2448. When using the FASTA algorithm for comparing nucleotide or amino acid sequences, a PAM120 weight residue table can, for example, be used with a *k*-tuple value of 2.

The percent identity between two sequences can be determined using techniques similar to those described above, with or without allowing gaps. In calculating percent identity, only exact matches are counted.

The invention also provides chimeric or fusion proteins corresponding to a marker of the invention. As used herein, a "chimeric protein" or "fusion protein" comprises all or part (preferably a biologically active part) of a polypeptide corresponding to a marker of the invention operably linked to a heterologous polypeptide (*i.e.*, a polypeptide other than the polypeptide corresponding to the marker).

Within the fusion protein, the term "operably linked" is intended to indicate that the polypeptide of the invention and the heterologous polypeptide are fused in-frame to each other. The heterologous polypeptide can be fused to the amino-terminus or the carboxyl-terminus of the polypeptide of the invention.

One useful fusion protein is a GST fusion protein in which a polypeptide corresponding to a marker of the invention is fused to the carboxyl terminus of GST sequences. Such fusion proteins can facilitate the purification of a recombinant polypeptide of the invention.

In another embodiment, the fusion protein contains a heterologous signal sequence at its amino terminus. For example, the native signal sequence of a polypeptide corresponding to a marker of the invention can be removed and replaced with a signal sequence from another protein. For example, the gp67 secretory sequence of the baculovirus envelope protein can be used as a heterologous signal sequence (Ausubel *et al.*, ed., *Current Protocols in Molecular Biology*, John Wiley & Sons, NY, 1992). Other examples of eukaryotic heterologous signal sequences include the secretory sequences of melittin and human placental alkaline phosphatase (Stratagene; La Jolla, California). In yet another example, useful prokaryotic heterologous signal sequences include the phoA secretory signal (Sambrook *et al., supra*) and the protein A secretory signal (Pharmacia Biotech; Piscataway, New Jersey).

In yet another embodiment, the fusion protein is an immunoglobulin fusion protein in which all or part of a polypeptide corresponding to a marker of the invention is fused to sequences derived from a member of the immunoglobulin protein family. The immunoglobulin fusion proteins of the invention can be incorporated into pharmaceutical compositions and administered to a subject to inhibit an interaction between a ligand (soluble or membrane-bound) and a protein on the surface of a cell (receptor), to thereby suppress signal transduction *in vivo*. The immunoglobulin fusion protein can be used to affect the bioavailability of a cognate ligand of a polypeptide of the invention. Inhibition of ligand/receptor interaction can be useful therapeutically, both for treating proliferative and differentiative disorders and for modulating (*e.g.* promoting or inhibiting) cell survival. Moreover, the immunoglobulin fusion proteins of the invention can be used as immunogens to produce antibodies directed against a

polypeptide of the invention in a subject, to purify ligands and in screening assays to identify molecules which inhibit the interaction of receptors with ligands.

Chimeric and fusion proteins of the invention can be produced by standard recombinant DNA techniques. In another embodiment, the fusion gene can be synthesized by conventional techniques including automated DNA synthesizers. Alternatively, PCR amplification of gene fragments can be carried out using anchor primers which give rise to complementary overhangs between two consecutive gene fragments which can subsequently be annealed and re-amplified to generate a chimeric gene sequence (see, *e.g.*, Ausubel *et al.*, *supra*). Moreover, many expression vectors are commercially available that already encode a fusion moiety (*e.g.*, a GST polypeptide). A nucleic acid encoding a polypeptide of the invention can be cloned into such an expression vector such that the fusion moiety is linked in-frame to the polypeptide of the invention.

A signal sequence can be used to facilitate secretion and isolation of the secreted protein or other proteins of interest. Signal sequences are typically characterized by a core of hydrophobic amino acids which are generally cleaved from the mature protein during secretion in one or more cleavage events. Such signal peptides contain processing sites that allow cleavage of the signal sequence from the mature proteins as they pass through the secretory pathway. Thus, the invention pertains to the described polypeptides having a signal sequence, as well as to polypeptides from which the signal sequence has been proteolytically cleaved (*i.e.*, the cleavage products). In one embodiment, a nucleic acid sequence encoding a signal sequence can be operably linked in an expression vector to a protein of interest, such as a protein which is ordinarily not secreted or is otherwise difficult to isolate. The signal sequence directs secretion of the protein, such as from a eukaryotic host into which the expression vector is transformed, and the signal sequence is subsequently or concurrently cleaved. The protein can then be readily purified from the extracellular medium by art recognized methods. Alternatively, the signal sequence can be linked to the protein of interest using a sequence which facilitates purification, such as with a GST domain.

The present invention also pertains to variants of the polypeptides corresponding to individual markers of the invention. Such variants have an altered amino acid sequence which can function as either agonists (mimetics) or as antagonists. Variants

can be generated by mutagenesis, *e.g.*, discrete point mutation or truncation. An agonist can retain substantially the same, or a subset, of the biological activities of the naturally occurring form of the protein. An antagonist of a protein can inhibit one or more of the activities of the naturally occurring form of the protein by, for example, competitively binding to a downstream or upstream member of a cellular signaling cascade which includes the protein of interest. Thus, specific biological effects can be elicited by treatment with a variant of limited function. Treatment of a subject with a variant having a subset of the biological activities of the naturally occurring form of the protein can have fewer side effects in a subject relative to treatment with the naturally occurring form of the protein.

Variants of a protein of the invention which function as either agonists (mimetics) or as antagonists can be identified by screening combinatorial libraries of mutants, *e.g.*, truncation mutants, of the protein of the invention for agonist or antagonist activity. In one embodiment, a variegated library of variants is generated by combinatorial mutagenesis at the nucleic acid level and is encoded by a variegated gene library. A variegated library of variants can be produced by, for example, enzymatically ligating a mixture of synthetic oligonucleotides into gene sequences such that a degenerate set of potential protein sequences is expressible as individual polypeptides, or alternatively, as a set of larger fusion proteins (*e.g.*, for phage display). There are a variety of methods which can be used to produce libraries of potential variants of the polypeptides of the invention from a degenerate oligonucleotide sequence. Methods for synthesizing degenerate oligonucleotides are known in the art (see, *e.g.*, Narang, 1983, *Tetrahedron* 39:3; Itakura *et al.*, 1984, *Annu. Rev. Biochem.* 53:323; Itakura *et al.*, 1984, *Science* 198:1056; Ike *et al.*, 1983 *Nucleic Acid Res.* 11:477).

In addition, libraries of fragments of the coding sequence of a polypeptide corresponding to a marker of the invention can be used to generate a variegated population of polypeptides for screening and subsequent selection of variants. For example, a library of coding sequence fragments can be generated by treating a double stranded PCR fragment of the coding sequence of interest with a nuclease under conditions wherein nicking occurs only about once per molecule, denaturing the double stranded DNA, renaturing the DNA to form double stranded DNA which can include sense/antisense pairs from different nicked products, removing single stranded portions

from reformed duplexes by treatment with S1 nuclease, and ligating the resulting fragment library into an expression vector. By this method, an expression library can be derived which encodes amino terminal and internal fragments of various sizes of the protein of interest.

Several techniques are known in the art for screening gene products of combinatorial libraries made by point mutations or truncation, and for screening cDNA libraries for gene products having a selected property. The most widely used techniques, which are amenable to high through-put analysis, for screening large gene libraries typically include cloning the gene library into replicable expression vectors, transforming appropriate cells with the resulting library of vectors, and expressing the combinatorial genes under conditions in which detection of a desired activity facilitates isolation of the vector encoding the gene whose product was detected. Recursive ensemble mutagenesis (REM), a technique which enhances the frequency of functional mutants in the libraries, can be used in combination with the screening assays to identify variants of a protein of the invention (Arkin and Yourvan, 1992, *Proc. Natl. Acad. Sci. USA 89*:7811-7815; Delgrave *et al.*, 1993, *Protein Engineering* 6(3):327-331).

An isolated polypeptide corresponding to a marker of the invention, or a fragment thereof, can be used as an immunogen to generate antibodies using standard techniques for polyclonal and monoclonal antibody preparation. The full-length polypeptide or protein can be used or, alternatively, the invention provides antigenic peptide fragments for use as immunogens. The antigenic peptide of a protein of the invention comprises at least 8 (preferably 10, 15, 20, or 30 or more) amino acid residues of the amino acid sequence of one of the polypeptides of the invention, and encompasses an epitope of the protein such that an antibody raised against the peptide forms a specific immune complex with a marker of the invention to which the protein corresponds. Preferred epitopes encompassed by the antigenic peptide are regions that are located on the surface of the protein, *e.g.*, hydrophilic regions. Hydrophobicity sequence analysis, hydrophilicity sequence analysis, or similar analyses can be used to identify hydrophilic regions.

An immunogen typically is used to prepare antibodies by immunizing a suitable (*i.e.* immunocompetent) subject such as a rabbit, goat, mouse, or other mammal or vertebrate. An appropriate immunogenic preparation can contain, for example,

recombinantly-expressed or chemically-synthesized polypeptide. The preparation can further include an adjuvant, such as Freund's complete or incomplete adjuvant, or a similar immunostimulatory agent.

Accordingly, another aspect of the invention pertains to antibodies directed against a polypeptide of the invention. The terms "antibody" and "antibody substance" as used interchangeably herein refer to immunoglobulin molecules and immunologically active portions of immunoglobulin molecules, *i.e.*, molecules that contain an antigen binding site which specifically binds an antigen, such as a polypeptide of the invention, e.g., an epitope of a polypeptide of the invention. A molecule which specifically binds to a given polypeptide of the invention is a molecule which binds the polypeptide, but does not substantially bind other molecules in a sample, *e.g.*, a biological sample, which naturally contains the polypeptide. Examples of immunologically active portions of immunoglobulin molecules include F(ab) and $F(ab')_2$ fragments which can be generated by treating the antibody with an enzyme such as pepsin. The invention provides polyclonal and monoclonal antibodies. The term "monoclonal antibody" or "monoclonal antibody composition", as used herein, refers to a population of antibody molecules that contain only one species of an antigen binding site capable of immunoreacting with a particular epitope.

Polyclonal antibodies can be prepared as described above by immunizing a suitable subject with a polypeptide of the invention as an immunogen. Preferred polyclonal antibody compositions are ones that have been selected for antibodies directed against a polypeptide or polypeptides of the invention. Particularly preferred polyclonal antibody preparations are ones that contain only antibodies directed against a polypeptide or polypeptides of the invention. Particularly preferred immunogen compositions are those that contain no other human proteins such as, for example, immunogen compositions made using a non-human host cell for recombinant expression of a polypeptide of the invention. In such a manner, the only human epitope or epitopes recognized by the resulting antibody compositions raised against this immunogen will be present as part of a polypeptide or polypeptides of the invention.

The antibody titer in the immunized subject can be monitored over time by standard techniques, such as with an enzyme linked immunosorbent assay (ELISA) using immobilized polypeptide. If desired, the antibody molecules can be harvested or

isolated from the subject (*e.g.*, from the blood or serum of the subject) and further purified by well-known techniques, such as protein A chromatography to obtain the IgG fraction. Alternatively, antibodies specific for a protein or polypeptide of the invention can be selected or (*e.g.*, partially purified) or purified by, *e.g.*, affinity chromatography. For example, a recombinantly expressed and purified (or partially purified) protein of the invention is produced as described herein, and covalently or non-covalently coupled to a solid support such as, for example, a chromatography column. The column can then be used to affinity purify antibodies specific for the proteins of the invention from a sample containing antibodies directed against a large number of different epitopes, thereby generating a substantially purified antibody composition, *i.e.*, one that is substantially free of contaminating antibodies. By a substantially purified antibody composition is meant, in this context, that the antibody sample contains at most only 30% (by dry weight) of contaminating antibodies directed against epitopes other than those of the desired protein or polypeptide of the invention, and preferably at most 20%, yet more preferably at most 10%, and most preferably at most 5% (by dry weight) of the sample is contaminating antibodies. A purified antibody composition means that at least 99% of the antibodies in the composition are directed against the desired protein or polypeptide of the invention.

At an appropriate time after immunization, *e.g.*, when the specific antibody titers are highest, antibody-producing cells can be obtained from the subject and used to prepare monoclonal antibodies by standard techniques, such as the hybridoma technique originally described by Kohler and Milstein (1975) *Nature* 256:495-497, the human B cell hybridoma technique (see Kozbor *et al.*, 1983, *Immunol. Today* 4:72), the EBV-hybridoma technique (see Cole *et al.*, pp. 77-96 In *Monoclonal Antibodies and Cancer Therapy*, Alan R. Liss, Inc., 1985) or trioma techniques. The technology for producing hybridomas is well known (see generally *Current Protocols in Immunology*, Coligan *et al.* ed., John Wiley & Sons, New York, 1994). Hybridoma cells producing a monoclonal antibody of the invention are detected by screening the hybridoma culture supernatants for antibodies that bind the polypeptide of interest, *e.g.*, using a standard ELISA assay.

Alternative to preparing monoclonal antibody-secreting hybridomas, a monoclonal antibody directed against a polypeptide of the invention can be identified and isolated by screening a recombinant combinatorial immunoglobulin library (*e.g.*, an antibody phage display library) with the polypeptide of interest. Kits for generating and screening phage display libraries are commercially available (*e.g.*, the Pharmacia *Recombinant Phage Antibody System*, Catalog No. 27-9400-01; and the Stratagene *SurfZAP Phage Display Kit*, Catalog No. 240612). Additionally, examples of methods and reagents particularly amenable for use in generating and screening antibody display library can be found in, for example, U.S. Patent No. 5,223,409; PCT Publication No. WO 92/18619; PCT Publication No. WO 91/17271; PCT Publication No. WO 92/20791; PCT Publication No. WO 92/15679; PCT Publication No. WO 93/01288; PCT Publication No. WO 92/01047; PCT Publication No. WO 92/09690; PCT Publication No. WO 90/02809; Fuchs *et al.* (1991) *Bio/Technology* 9:1370-1372; Hay *et al.* (1992) *Hum. Antibod. Hybridomas* 3:81-85; Huse *et al.* (1989) *Science* 246:1275-1281; Griffiths *et al.* (1993) *EMBO J.* 12:725-734.

Additionally, recombinant antibodies, such as chimeric and humanized monoclonal antibodies, comprising both human and non-human portions, which can be made using standard recombinant DNA techniques, are within the scope of the invention. A chimeric antibody is a molecule in which different portions are derived from different animal species, such as those having a variable region derived from a murine mAb and a human immunoglobulin constant region. (See, *e.g.*, Cabilly et al., U.S. Patent No. 4,816,567; and Boss et al., U.S. Patent No. 4,816,397, which are incorporated herein by reference in their entirety.) Humanized antibodies are antibody molecules from non-human species having one or more complementarily determining regions (CDRs) from the non-human species and a framework region from a human immunoglobulin molecule. (See, *e.g.*, Queen, U.S. Patent No. 5,585,089, which is incorporated herein by reference in its entirety.) Such chimeric and humanized monoclonal antibodies can be produced by recombinant DNA techniques known in the art, for example using methods described in PCT Publication No. WO 87/02671; European Patent Application 184,187; European Patent Application 171,496; European Patent Application 173,494; PCT Publication No. WO 86/01533; U.S. Patent No. 4,816,567; European Patent Application 125,023; Better *et al.* (1988) *Science* 240:1041-

1043; Liu *et al.* (1987) *Proc. Natl. Acad. Sci. USA* 84:3439-3443; Liu *et al.* (1987) *J. Immunol.* 139:3521- 3526; Sun *et al.* (1987) *Proc. Natl. Acad. Sci. USA* 84:214-218; Nishimura *et al.* (1987) *Cancer Res.* 47:999-1005; Wood *et al.* (1985) *Nature* 314:446-449; and Shaw *et al.* (1988) *J. Natl. Cancer Inst.* 80:1553-1559); Morrison (1985) *Science* 229:1202-1207; Oi *et al.* (1986) *Bio/Techniques* 4:214; U.S. Patent 5,225,539; Jones *et al.* (1986) *Nature* 321:552-525; Verhoeyan *et al.* (1988) *Science* 239:1534; and Beidler *et al.* (1988) *J. Immunol.* 141:4053-4060.

Antibodies of the invention may be used as therapeutic agents in treating cancers. In a preferred embodiment, completely human antibodies of the invention are used for therapeutic treatment of human cancer patients, particularly those having an ovarian cancer. Such antibodies can be produced, for example, using transgenic mice which are incapable of expressing endogenous immunoglobulin heavy and light chains genes, but which can express human heavy and light chain genes. The transgenic mice are immunized in the normal fashion with a selected antigen, *e.g.*, all or a portion of a polypeptide corresponding to a marker of the invention. Monoclonal antibodies directed against the antigen can be obtained using conventional hybridoma technology. The human immunoglobulin transgenes harbored by the transgenic mice rearrange during B cell differentiation, and subsequently undergo class switching and somatic mutation. Thus, using such a technique, it is possible to produce therapeutically useful IgG, IgA and IgE antibodies. For an overview of this technology for producing human antibodies, see Lonberg and Huszar (1995) *Int. Rev. Immunol.* 13:65-93). For a detailed discussion of this technology for producing human antibodies and human monoclonal antibodies and protocols for producing such antibodies, see, *e.g.*, U.S. Patent 5,625,126; U.S. Patent 5,633,425; U.S. Patent 5,569,825; U.S. Patent 5,661,016; and U.S. Patent 5,545,806. In addition, companies such as Abgenix, Inc. (Freemont, CA), can be engaged to provide human antibodies directed against a selected antigen using technology similar to that described above.

Completely human antibodies which recognize a selected epitope can be generated using a technique referred to as "guided selection." In this approach a selected non-human monoclonal antibody, *e.g.*, a murine antibody, is used to guide the selection of a completely human antibody recognizing the same epitope (Jespers *et al.*, 1994, *Bio/technology* 12:899-903).

An antibody directed against a polypeptide corresponding to a marker of the invention (*e.g.*, a monoclonal antibody) can be used to isolate the polypeptide by standard techniques, such as affinity chromatography or immunoprecipitation. Moreover, such an antibody can be used to detect the marker (*e.g.*, in a cellular lysate or cell supernatant) in order to evaluate the level and pattern of expression of the marker. The antibodies can also be used diagnostically to monitor protein levels in tissues or body fluids (*e.g.* in an ovary-associated body fluid) as part of a clinical testing procedure, *e.g.*, to, for example, determine the efficacy of a given treatment regimen. Detection can be facilitated by coupling the antibody to a detectable substance. Examples of detectable substances include various enzymes, prosthetic groups, fluorescent materials, luminescent materials, bioluminescent materials, and radioactive materials. Examples of suitable enzymes include horseradish peroxidase, alkaline phosphatase, β-galactosidase, or acetylcholinesterase; examples of suitable prosthetic group complexes include streptavidin/biotin and avidin/biotin; examples of suitable fluorescent materials include umbelliferone, fluorescein, fluorescein isothiocyanate, rhodamine, dichlorotriazinylamine fluorescein, dansyl chloride or phycoerythrin; an example of a luminescent material includes luminol; examples of bioluminescent materials include luciferase, luciferin, and aequorin, and examples of suitable radioactive material include ^{125}I, ^{131}I, ^{35}S or ^{3}H.

Further, an antibody (or fragment thereof) can be conjugated to a therapeutic moiety such as a cytotoxin, a therapeutic agent or a radioactive metal ion. A cytotoxin or cytotoxic agent includes any agent that is detrimental to cells. Examples include taxol, cytochalasin B, gramicidin D, ethidium bromide, emetine, mitomycin, etoposide, tenoposide, vincristine, vinblastine, colchicin, doxorubicin, daunorubicin, dihydroxy anthracin dione, mitoxantrone, mithramycin, actinomycin D, 1-dehydrotestosterone, glucocorticoids, procaine, tetracaine, lidocaine, propranolol, and puromycin and analogs or homologs thereof. Therapeutic agents include, but are not limited to, antimetabolites (*e.g.*, methotrexate, 6-mercaptopurine, 6-thioguanine, cytarabine, 5-fluorouracil decarbazine), alkylating agents (*e.g.*, mechlorethamine, thioepa chlorambucil, melphalan, carmustine (BSNU) and lomustine (CCNU), cyclothosphamide, busulfan, dibromomannitol, streptozotocin, mitomycin C, and cis-dichlorodiamine platinum (II) (DDP) cisplatin), anthracyclines (*e.g.*, daunorubicin (formerly daunomycin) and

doxorubicin), antibiotics *(e.g.*, dactinomycin (formerly actinomycin), bleomycin, mithramycin, and anthramycin (AMC)), and anti-mitotic agents (*e.g.*, vincristine and vinblastine).

The conjugates of the invention can be used for modifying a given biological response, the drug moiety is not to be construed as limited to classical chemical therapeutic agents. For example, the drug moiety may be a protein or polypeptide possessing a desired biological activity. Such proteins may include, for example, a toxin such as abrin, ricin A, pseudomonas exotoxin, or diphtheria toxin; a protein such as tumor necrosis factor, .alpha.-interferon, .beta.-interferon, nerve growth factor, platelet derived growth factor, tissue plasminogen activator; or, biological response modifiers such as, for example, lymphokines, interleukin-1 ("IL-1"), interleukin-2 ("IL-2"), interleukin-6 ("IL-6"), granulocyte macrophase colony stimulating factor ("GM-CSF"), granulocyte colony stimulating factor ("G-CSF"), or other growth factors.

Techniques for conjugating such therapeutic moiety to antibodies are well known, see, *e.g.*, Arnon et al., "Monoclonal Antibodies For Immunotargeting Of Drugs In Cancer Therapy", in Monoclonal Antibodies And Cancer Therapy, Reisfeld et al. (eds.), pp. 243-56 (Alan R. Liss, Inc. 1985); Hellstrom et al., "Antibodies For Drug Delivery", in Controlled Drug Delivery (2nd Ed.), Robinson et al. (eds.), pp. 623-53 (Marcel Dekker, Inc. 1987); Thorpe, "Antibody Carriers Of Cytotoxic Agents In Cancer Therapy: A Review", in Monoclonal Antibodies '84: Biological And Clinical Applications, Pinchera et al. (eds.), pp. 475-506 (1985); "Analysis, Results, And Future Prospective Of The Therapeutic Use Of Radiolabeled Antibody In Cancer Therapy", in Monoclonal Antibodies For Cancer Detection And Therapy, Baldwin et al. (eds.), pp. 303-16 (Academic Press 1985), and Thorpe et al., "The Preparation And Cytotoxic Properties Of Antibody-Toxin Conjugates", Immunol. Rev., 62:119-58 (1982).

Alternatively, an antibody can be conjugated to a second antibody to form an antibody heteroconjugate as described by Segal in U.S. Patent No. 4,676,980.

Accordingly, in one aspect, the invention provides substantially purified antibodies or fragments thereof, and non-human antibodies or fragments thereof, which antibodies or fragments specifically bind to a polypeptide comprising an amino acid sequence selected from the group consisting of the amino acid sequences of the present invention, an amino acid sequence encoded by the cDNA of the present invention, a

fragment of at least 15 amino acid residues of an amino acid sequence of the present invention, an amino acid sequence which is at least 95% identical to the amino acid sequence of the present invention (wherein the percent identity is determined using the ALIGN program of the GCG software package with a PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4) and an amino acid sequence which is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule consisting of the nucleic acid molecules of the present invention, or a complement thereof, under conditions of hybridization of 6X SSC at 45°C and washing in 0.2 X SSC, 0.1% SDS at 65°C. In various embodiments, the substantially purified antibodies of the invention, or fragments thereof, can be human, non-human, chimeric and/or humanized antibodies.

In another aspect, the invention provides non-human antibodies or fragments thereof, which antibodies or fragments specifically bind to a polypeptide comprising an amino acid sequence selected from the group consisting of: the amino acid sequence of the present invention, an amino acid sequence encoded by the cDNA of the present invention, a fragment of at least 15 amino acid residues of the amino acid sequence of the present invention, an amino acid sequence which is at least 95% identical to the amino acid sequence of the present invention (wherein the percent identity is determined using the ALIGN program of the GCG software package with a PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4) and an amino acid sequence which is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule consisting of the nucleic acid molecules of the present invention, or a complement thereof, under conditions of hybridization of 6X SSC at 45°C and washing in 0.2 X SSC, 0.1% SDS at 65°C. Such non-human antibodies can be goat, mouse, sheep, horse, chicken, rabbit, or rat antibodies. Alternatively, the non-human antibodies of the invention can be chimeric and/or humanized antibodies. In addition, the non-human antibodies of the invention can be polyclonal antibodies or monoclonal antibodies.

In still a further aspect, the invention provides monoclonal antibodies or fragments thereof, which antibodies or fragments specifically bind to a polypeptide comprising an amino acid sequence selected from the group consisting of the amino acid sequences of the present invention, an amino acid sequence encoded by the cDNA of the

present invention, a fragment of at least 15 amino acid residues of an amino acid sequence of the present invention, an amino acid sequence which is at least 95% identical to an amino acid sequence of the present invention (wherein the percent identity is determined using the ALIGN program of the GCG software package with a PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4) and an amino acid sequence which is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule consisting of the nucleic acid molecules of the present invention, or a complement thereof, under conditions of hybridization of 6X SSC at 45°C and washing in 0.2 X SSC, 0.1% SDS at 65°C. The monoclonal antibodies can be human, humanized, chimeric and/or non-human antibodies.

The substantially purified antibodies or fragments thereof may specifically bind to a signal peptide, a secreted sequence, an extracellular domain, a transmembrane or a cytoplasmic domain or cytoplasmic membrane of a polypeptide of the invention. In a particularly preferred embodiment, the substantially purified antibodies or fragments thereof, the non-human antibodies or fragments thereof, and/or the monoclonal antibodies or fragments thereof, of the invention specifically bind to a secreted sequence or an extracellular domain of the amino acid sequences of the present invention.

Any of the antibodies of the invention can be conjugated to a therapeutic moiety or to a detectable substance. Non-limiting examples of detectable substances that can be conjugated to the antibodies of the invention are an enzyme, a prosthetic group, a fluorescent material, a luminescent material, a bioluminescent material, and a radioactive material.

The invention also provides a kit containing an antibody of the invention conjugated to a detectable substance, and instructions for use. Still another aspect of the invention is a pharmaceutical composition comprising an antibody of the invention and a pharmaceutically acceptable carrier. In preferred embodiments, the pharmaceutical composition contains an antibody of the invention, a therapeutic moiety, and a pharmaceutically acceptable carrier.

Still another aspect of the invention is a method of making an antibody that specifically recognizes a polypeptide of the present invention, the method comprising immunizing a mammal with a polypeptide. The polypeptide used as an immungen comprises an amino acid sequence selected from the group consisting of the amino acid

sequence of the present invention, an amino acid sequence encoded by the cDNA of the nucleic acid molecules of the present invention, a fragment of at least 15 amino acid residues of the amino acid sequence of the present invention, an amino acid sequence which is at least 95% identical to the amino acid sequence of the present invention (wherein the percent identity is determined using the ALIGN program of the GCG software package with a PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4) and an amino acid sequence which is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule consisting of the nucleic acid molecules of the present invention, or a complement thereof, under conditions of hybridization of 6X SSC at 45°C and washing in 0.2 X SSC, 0.1% SDS at 65°C.

After immunization, a sample is collected from the mammal that contains an antibody that specifically recognizes the polypeptide. Preferably, the polypeptide is recombinantly produced using a non-human host cell. Optionally, the antibodies can be further purified from the sample using techniques well known to those of skill in the art. The method can further comprise producing a monoclonal antibody- producing cell from the cells of the mammal. Optionally, antibodies are collected from the antibody-producing cell.

III. Recombinant Expression Vectors and Host Cells

Another aspect of the invention pertains to vectors, preferably expression vectors, containing a nucleic acid encoding a polypeptide corresponding to a marker of the invention (or a portion of such a polypeptide). As used herein, the term "vector" refers to a nucleic acid molecule capable of transporting another nucleic acid to which it has been linked. One type of vector is a "plasmid", which refers to a circular double stranded DNA loop into which additional DNA segments can be ligated. Another type of vector is a viral vector, wherein additional DNA segments can be ligated into the viral genome. Certain vectors are capable of autonomous replication in a host cell into which they are introduced (*e.g.*, bacterial vectors having a bacterial origin of replication and episomal mammalian vectors). Other vectors (*e.g.*, non-episomal mammalian vectors) are integrated into the genome of a host cell upon introduction into the host cell, and thereby are replicated along with the host genome. Moreover, certain vectors, namely expression vectors, are capable of directing the expression of genes to which they are

operably linked. In general, expression vectors of utility in recombinant DNA techniques are often in the form of plasmids (vectors). However, the invention is intended to include such other forms of expression vectors, such as viral vectors (*e.g.*, replication defective retroviruses, adenoviruses and adeno-associated viruses), which serve equivalent functions.

The recombinant expression vectors of the invention comprise a nucleic acid of the invention in a form suitable for expression of the nucleic acid in a host cell. This means that the recombinant expression vectors include one or more regulatory sequences, selected on the basis of the host cells to be used for expression, which is operably linked to the nucleic acid sequence to be expressed. Within a recombinant expression vector, "operably linked" is intended to mean that the nucleotide sequence of interest is linked to the regulatory sequence(s) in a manner which allows for expression of the nucleotide sequence (*e.g.*, in an *in vitro* transcription/translation system or in a host cell when the vector is introduced into the host cell). The term "regulatory sequence" is intended to include promoters, enhancers and other expression control elements (*e.g.*, polyadenylation signals). Such regulatory sequences are described, for example, in Goeddel, *Methods in Enzymology: Gene Expression Technology* vol.185, Academic Press, San Diego, CA (1991). Regulatory sequences include those which direct constitutive expression of a nucleotide sequence in many types of host cell and those which direct expression of the nucleotide sequence only in certain host cells (*e.g.*, tissue-specific regulatory sequences). It will be appreciated by those skilled in the art that the design of the expression vector can depend on such factors as the choice of the host cell to be transformed, the level of expression of protein desired, and the like. The expression vectors of the invention can be introduced into host cells to thereby produce proteins or peptides, including fusion proteins or peptides, encoded by nucleic acids as described herein.

The recombinant expression vectors of the invention can be designed for expression of a polypeptide corresponding to a marker of the invention in prokaryotic (*e.g.*, *E. coli*) or eukaryotic cells (*e.g.*, insect cells {using baculovirus expression vectors}, yeast cells or mammalian cells). Suitable host cells are discussed further in Goeddel, *supra*. Alternatively, the recombinant expression vector can be transcribed

and translated *in vitro*, for example using T7 promoter regulatory sequences and T7 polymerase.

Expression of proteins in prokaryotes is most often carried out in *E. coli* with vectors containing constitutive or inducible promoters directing the expression of either fusion or non-fusion proteins. Fusion vectors add a number of amino acids to a protein encoded therein, usually to the amino terminus of the recombinant protein. Such fusion vectors typically serve three purposes: 1) to increase expression of recombinant protein; 2) to increase the solubility of the recombinant protein; and 3) to aid in the purification of the recombinant protein by acting as a ligand in affinity purification. Often, in fusion expression vectors, a proteolytic cleavage site is introduced at the junction of the fusion moiety and the recombinant protein to enable separation of the recombinant protein from the fusion moiety subsequent to purification of the fusion protein. Such enzymes, and their cognate recognition sequences, include Factor Xa, thrombin and enterokinase. Typical fusion expression vectors include pGEX (Pharmacia Biotech Inc; Smith and Johnson, 1988, *Gene* 67:31-40), pMAL (New England Biolabs, Beverly, MA) and pRIT5 (Pharmacia, Piscataway, NJ) which fuse glutathione S-transferase (GST), maltose E binding protein, or protein A, respectively, to the target recombinant protein.

Examples of suitable inducible non-fusion *E. coli* expression vectors include pTrc (Amann *et al.*, 1988, *Gene* 69:301-315) and pET 11d (Studier *et al.*, p. 60-89, In *Gene Expression Technology: Methods in Enzymology* vol.185, Academic Press, San Diego, CA, 1991). Target gene expression from the pTrc vector relies on host RNA polymerase transcription from a hybrid trp-lac fusion promoter. Target gene expression from the pET 11d vector relies on transcription from a T7 gn10-lac fusion promoter mediated by a co-expressed viral RNA polymerase (T7 gn1). This viral polymerase is supplied by host strains BL21(DE3) or HMS174(DE3) from a resident prophage harboring a T7 gn1 gene under the transcriptional control of the lacUV 5 promoter.

One strategy to maximize recombinant protein expression in *E. coli* is to express the protein in a host bacteria with an impaired capacity to proteolytically cleave the recombinant protein (Gottesman, p. 119-128, In *Gene Expression Technology: Methods in Enzymology* vol. 185, Academic Press, San Diego, CA, 1990. Another strategy is to alter the nucleic acid sequence of the nucleic acid to be inserted into an expression vector so that the individual codons for each amino acid are those preferentially utilized

in *E. coli* (Wada *et al.*, 1992, *Nucleic Acids Res.* 20:2111-2118). Such alteration of nucleic acid sequences of the invention can be carried out by standard DNA synthesis techniques.

In another embodiment, the expression vector is a yeast expression vector. Examples of vectors for expression in yeast *S. cerevisiae* include pYepSec1 (Baldari *et al.*, 1987, *EMBO J.* 6:229-234), pMFa (Kurjan and Herskowitz, 1982, *Cell* 30:933-943), pJRY88 (Schultz *et al.*, 1987, *Gene* 54:113-123), pYES2 (Invitrogen Corporation, San Diego, CA), and pPicZ (Invitrogen Corp, San Diego, CA).

Alternatively, the expression vector is a baculovirus expression vector. Baculovirus vectors available for expression of proteins in cultured insect cells (*e.g.*, Sf 9 cells) include the pAc series (Smith *et al.*, 1983, *Mol. Cell Biol.* 3:2156-2165) and the pVL series (Lucklow and Summers, 1989, *Virology* 170:31-39).

In yet another embodiment, a nucleic acid of the invention is expressed in mammalian cells using a mammalian expression vector. Examples of mammalian expression vectors include pCDM8 (Seed, 1987, *Nature* 329:840) and pMT2PC (Kaufman *et al.*, 1987, *EMBO J.* 6:187-195). When used in mammalian cells, the expression vector's control functions are often provided by viral regulatory elements. For example, commonly used promoters are derived from polyoma, Adenovirus 2, cytomegalovirus and Simian Virus 40. For other suitable expression systems for both prokaryotic and eukaryotic cells see chapters 16 and 17 of Sambrook *et al.*, *supra.*

In another embodiment, the recombinant mammalian expression vector is capable of directing expression of the nucleic acid preferentially in a particular cell type (*e.g.*, tissue-specific regulatory elements are used to express the nucleic acid). Tissue-specific regulatory elements are known in the art. Non-limiting examples of suitable tissue-specific promoters include the albumin promoter (liver-specific; Pinkert *et al.*, 1987, *Genes Dev.* 1:268-277), lymphoid-specific promoters (Calame and Eaton, 1988, *Adv. Immunol.* 43:235-275), in particular promoters of T cell receptors (Winoto and Baltimore, 1989, *EMBO J.* 8:729-733) and immunoglobulins (Banerji *et al.*, 1983, *Cell* 33:729-740; Queen and Baltimore, 1983, *Cell* 33:741-748), neuron-specific promoters (*e.g.*, the neurofilament promoter; Byrne and Ruddle, 1989, *Proc. Natl. Acad. Sci. USA* 86:5473-5477), pancreas-specific promoters (Edlund *et al.*, 1985, *Science* 230:912-916), and mammary gland-specific promoters (*e.g.*, milk whey promoter; U.S. Patent No.

4,873,316 and European Application Publication No. 264,166). Developmentally-regulated promoters are also encompassed, for example the murine hox promoters (Kessel and Gruss, 1990, *Science* 249:374-379) and the α-fetoprotein promoter (Camper and Tilghman, 1989, *Genes Dev.* 3:537-546).

The invention further provides a recombinant expression vector comprising a DNA molecule of the invention cloned into the expression vector in an antisense orientation. That is, the DNA molecule is operably linked to a regulatory sequence in a manner which allows for expression (by transcription of the DNA molecule) of an RNA molecule which is antisense to the mRNA encoding a polypeptide of the invention. Regulatory sequences operably linked to a nucleic acid cloned in the antisense orientation can be chosen which direct the continuous expression of the antisense RNA molecule in a variety of cell types, for instance viral promoters and/or enhancers, or regulatory sequences can be chosen which direct constitutive, tissue-specific or cell type specific expression of antisense RNA. The antisense expression vector can be in the form of a recombinant plasmid, phagemid, or attenuated virus in which antisense nucleic acids are produced under the control of a high efficiency regulatory region, the activity of which can be determined by the cell type into which the vector is introduced. For a discussion of the regulation of gene expression using antisense genes see Weintraub *et al.*, 1986, *Trends in Genetics*, Vol. 1(1).

Another aspect of the invention pertains to host cells into which a recombinant expression vector of the invention has been introduced. The terms "host cell" and "recombinant host cell" are used interchangeably herein. It is understood that such terms refer not only to the particular subject cell but to the progeny or potential progeny of such a cell. Because certain modifications may occur in succeeding generations due to either mutation or environmental influences, such progeny may not, in fact, be identical to the parent cell, but are still included within the scope of the term as used herein.

A host cell can be any prokaryotic (*e.g.*, *E. coli*) or eukaryotic cell (*e.g.*, insect cells, yeast or mammalian cells).

Vector DNA can be introduced into prokaryotic or eukaryotic cells via conventional transformation or transfection techniques. As used herein, the terms "transformation" and "transfection" are intended to refer to a variety of art-recognized

techniques for introducing foreign nucleic acid into a host cell, including calcium phosphate or calcium chloride co-precipitation, DEAE-dextran-mediated transfection, lipofection, or electroporation. Suitable methods for transforming or transfecting host cells can be found in Sambrook, *et al.* (*supra*), and other laboratory manuals.

For stable transfection of mammalian cells, it is known that, depending upon the expression vector and transfection technique used, only a small fraction of cells may integrate the foreign DNA into their genome. In order to identify and select these integrants, a gene that encodes a selectable marker (*e.g.*, for resistance to antibiotics) is generally introduced into the host cells along with the gene of interest. Preferred selectable markers include those which confer resistance to drugs, such as G418, hygromycin and methotrexate. Cells stably transfected with the introduced nucleic acid can be identified by drug selection (*e.g.*, cells that have incorporated the selectable marker gene will survive, while the other cells die).

A host cell of the invention, such as a prokaryotic or eukaryotic host cell in culture, can be used to produce a polypeptide corresponding to a marker of the invention. Accordingly, the invention further provides methods for producing a polypeptide corresponding to a marker of the invention using the host cells of the invention. In one embodiment, the method comprises culturing the host cell of invention (into which a recombinant expression vector encoding a polypeptide of the invention has been introduced) in a suitable medium such that the marker is produced. In another embodiment, the method further comprises isolating the marker polypeptide from the medium or the host cell.

The host cells of the invention can also be used to produce nonhuman transgenic animals. For example, in one embodiment, a host cell of the invention is a fertilized oocyte or an embryonic stem cell into which a sequences encoding a polypeptide corresponding to a marker of the invention have been introduced. Such host cells can then be used to create non-human transgenic animals in which exogenous sequences encoding a marker protein of the invention have been introduced into their genome or homologous recombinant animals in which endogenous gene(s) encoding a polypeptide corresponding to a marker of the invention sequences have been altered. Such animals are useful for studying the function and/or activity of the polypeptide corresponding to the marker and for identifying and/or evaluating modulators of polypeptide activity. As

used herein, a "transgenic animal" is a non-human animal, preferably a mammal, more preferably a rodent such as a rat or mouse, in which one or more of the cells of the animal includes a transgene. Other examples of transgenic animals include non-human primates, sheep, dogs, cows, goats, chickens, amphibians, etc. A transgene is exogenous DNA which is integrated into the genome of a cell from which a transgenic animal develops and which remains in the genome of the mature animal, thereby directing the expression of an encoded gene product in one or more cell types or tissues of the transgenic animal. As used herein, an "homologous recombinant animal" is a non-human animal, preferably a mammal, more preferably a mouse, in which an endogenous gene has been altered by homologous recombination between the endogenous gene and an exogenous DNA molecule introduced into a cell of the animal, *e.g.*, an embryonic cell of the animal, prior to development of the animal.

A transgenic animal of the invention can be created by introducing a nucleic acid encoding a polypeptide corresponding to a marker of the invention into the male pronuclei of a fertilized oocyte, *e.g.*, by microinjection, retroviral infection, and allowing the oocyte to develop in a pseudopregnant female foster animal. Intronic sequences and polyadenylation signals can also be included in the transgene to increase the efficiency of expression of the transgene. A tissue-specific regulatory sequence(s) can be operably linked to the transgene to direct expression of the polypeptide of the invention to particular cells. Methods for generating transgenic animals via embryo manipulation and microinjection, particularly animals such as mice, have become conventional in the art and are described, for example, in U.S. Patent Nos. 4,736,866 and 4,870,009, U.S. Patent No. 4,873,191 and in Hogan, *Manipulating the Mouse Embryo*, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., 1986. Similar methods are used for production of other transgenic animals. A transgenic founder animal can be identified based upon the presence of the transgene in its genome and/or expression of mRNA encoding the transgene in tissues or cells of the animals. A transgenic founder animal can then be used to breed additional animals carrying the transgene. Moreover, transgenic animals carrying the transgene can further be bred to other transgenic animals carrying other transgenes.

To create an homologous recombinant animal, a vector is prepared which contains at least a portion of a gene encoding a polypeptide corresponding to a marker of the invention into which a deletion, addition or substitution has been introduced to thereby alter, *e.g.*, functionally disrupt, the gene. In a preferred embodiment, the vector is designed such that, upon homologous recombination, the endogenous gene is functionally disrupted (*i.e.*, no longer encodes a functional protein; also referred to as a "knock out" vector). Alternatively, the vector can be designed such that, upon homologous recombination, the endogenous gene is mutated or otherwise altered but still encodes functional protein (*e.g.*, the upstream regulatory region can be altered to thereby alter the expression of the endogenous protein). In the homologous recombination vector, the altered portion of the gene is flanked at its 5' and 3' ends by additional nucleic acid of the gene to allow for homologous recombination to occur between the exogenous gene carried by the vector and an endogenous gene in an embryonic stem cell. The additional flanking nucleic acid sequences are of sufficient length for successful homologous recombination with the endogenous gene. Typically, several kilobases of flanking DNA (both at the 5' and 3' ends) are included in the vector (see, *e.g.*, Thomas and Capecchi, 1987, *Cell* 51:503 for a description of homologous recombination vectors). The vector is introduced into an embryonic stem cell line (*e.g.*, by electroporation) and cells in which the introduced gene has homologously recombined with the endogenous gene are selected (see, *e.g.*, Li *et al.*, 1992, *Cell* 69:915). The selected cells are then injected into a blastocyst of an animal (*e.g.*, a mouse) to form aggregation chimeras (see, *e.g.*, Bradley, *Teratocarcinomas and Embryonic Stem Cells: A Practical Approach*, Robertson, Ed., IRL, Oxford, 1987, pp. 113-152). A chimeric embryo can then be implanted into a suitable pseudopregnant female foster animal and the embryo brought to term. Progeny harboring the homologously recombined DNA in their germ cells can be used to breed animals in which all cells of the animal contain the homologously recombined DNA by germline transmission of the transgene. Methods for constructing homologous recombination vectors and homologous recombinant animals are described further in Bradley (1991) *Current Opinion in Bio/Technology* 2:823-829 and in PCT Publication NOS. WO 90/11354, WO 91/01140, WO 92/0968, and WO 93/04169.

In another embodiment, transgenic non-human animals can be produced which contain selected systems which allow for regulated expression of the transgene. One example of such a system is the *cre/loxP* recombinase system of bacteriophage P1. For a description of the *cre/loxP* recombinase system, see, *e.g.*, Lakso *et al.* (1992) *Proc. Natl. Acad. Sci. USA* 89:6232-6236. Another example of a recombinase system is the FLP recombinase system of *Saccharomyces cerevisiae* (O'Gorman *et al.*, 1991, *Science* 251:1351-1355). If a *cre/loxP* recombinase system is used to regulate expression of the transgene, animals containing transgenes encoding both the *Cre* recombinase and a selected protein are required. Such animals can be provided through the construction of "double" transgenic animals, *e.g.*, by mating two transgenic animals, one containing a transgene encoding a selected protein and the other containing a transgene encoding a recombinase.

Clones of the non-human transgenic animals described herein can also be produced according to the methods described in Wilmut *et al.* (1997) *Nature* 385:810-813 and PCT Publication NOS. WO 97/07668 and WO 97/07669.

IV. Pharmaceutical Compositions

The nucleic acid molecules, polypeptides, and antibodies (also referred to herein as "active compounds") corresponding to a marker of the invention can be incorporated into pharmaceutical compositions suitable for administration. Such compositions typically comprise the nucleic acid molecule, protein, or antibody and a pharmaceutically acceptable carrier. As used herein the language "pharmaceutically acceptable carrier" is intended to include any and all solvents, dispersion media, coatings, antibacterial and antifungal agents, isotonic and absorption delaying agents, and the like, compatible with pharmaceutical administration. The use of such media and agents for pharmaceutically active substances is well known in the art. Except insofar as any conventional media or agent is incompatible with the active compound, use thereof in the compositions is contemplated. Supplementary active compounds can also be incorporated into the compositions.

The invention includes methods for preparing pharmaceutical compositions for modulating the expression or activity of a polypeptide or nucleic acid corresponding to a marker of the invention. Such methods comprise formulating a pharmaceutically

acceptable carrier with an agent which modulates expression or activity of a polypeptide or nucleic acid corresponding to a marker of the invention. Such compositions can further include additional active agents. Thus, the invention further includes methods for preparing a pharmaceutical composition by formulating a pharmaceutically acceptable carrier with an agent which modulates expression or activity of a polypeptide or nucleic acid corresponding to a marker of the invention and one or more additional active compounds.

The invention also provides methods (also referred to herein as "screening assays") for identifying modulators, *i.e.,* candidate or test compounds or agents (*e.g.,* peptides, peptidomimetics, peptoids, small molecules or other drugs) which (a) bind to the marker, or (b) have a modulatory (*e.g.,* stimulatory or inhibitory) effect on the activity of the marker or, more specifically, (c) have a modulatory effect on the interactions of the marker with one or more of its natural substrates (*e.g.,* peptide, protein, hormone, co-factor, or nucleic acid), or (d) have a modulatory effect on the expression of the marker. Such assays typically comprise a reaction between the marker and one or more assay components. The other components may be either the test compound itself, or a combination of test compound and a natural binding partner of the marker.

The test compounds of the present invention may be obtained from any available source, including systematic libraries of natural and/or synthetic compounds. Test compounds may also be obtained by any of the numerous approaches in combinatorial library methods known in the art, including: biological libraries; peptoid libraries (libraries of molecules having the functionalities of peptides, but with a novel, non-peptide backbone which are resistant to enzymatic degradation but which nevertheless remain bioactive; see, *e.g.,* Zuckermann *et al.*, 1994, *J. Med. Chem.* 37:2678-85); spatially addressable parallel solid phase or solution phase libraries; synthetic library methods requiring deconvolution; the 'one-bead one-compound' library method; and synthetic library methods using affinity chromatography selection. The biological library and peptoid library approaches are limited to peptide libraries, while the other four approaches are applicable to peptide, non-peptide oligomer or small molecule libraries of compounds (Lam, 1997, *Anticancer Drug Des.* 12:145).

Examples of methods for the synthesis of molecular libraries can be found in the art, for example in: DeWitt *et al.* (1993) *Proc. Natl. Acad. Sci. U.S.A.* 90:6909; Erb *et al.* (1994) *Proc. Natl. Acad. Sci. USA* 91:11422; Zuckermann *et al.* (1994). *J. Med. Chem.* 37:2678; Cho *et al.* (1993) *Science* 261:1303; Carrell *et al.* (1994) *Angew. Chem. Int. Ed. Engl.* 33:2059; Carell *et al.* (1994) *Angew. Chem. Int. Ed. Engl.* 33:2061; and in Gallop *et al.* (1994) *J. Med. Chem.* 37:1233.

Libraries of compounds may be presented in solution (*e.g.,* Houghten, 1992, *Biotechniques* 13:412-421), or on beads (Lam, 1991, *Nature* 354:82-84), chips (Fodor, 1993, *Nature* 364:555-556), bacteria and/or spores, (Ladner, USP 5,223,409), plasmids (Cull *et al*, 1992, *Proc Natl Acad Sci USA* 89:1865-1869) or on phage (Scott and Smith, 1990, *Science* 249:386-390; Devlin, 1990, *Science* 249:404-406; Cwirla *et al,* 1990, *Proc. Natl. Acad. Sci.* 87:6378-6382; Felici, 1991, *J. Mol. Biol.* 222:301-310; Ladner, *supra.*).

In one embodiment, the invention provides assays for screening candidate or test compounds which are substrates of a marker or biologically active portion thereof. In another embodiment, the invention provides assays for screening candidate or test compounds which bind to a marker or biologically active portion thereof. Determining the ability of the test compound to directly bind to a marker can be accomplished, for example, by coupling the compound with a radioisotope or enzymatic label such that binding of the compound to the marker can be determined by detecting the labeled marker compound in a complex. For example, compounds (*e.g.,* marker substrates) can be labeled with ^{125}I, ^{35}S, ^{14}C, or ^{3}H, either directly or indirectly, and the radioisotope detected by direct counting of radioemission or by scintillation counting. Alternatively, assay components can be enzymatically labeled with, for example, horseradish peroxidase, alkaline phosphatase, or luciferase, and the enzymatic label detected by determination of conversion of an appropriate substrate to product.

In another embodiment, the invention provides assays for screening candidate or test compounds which modulate the activity of a marker or a biologically active portion thereof. In all likelihood, the marker can, *in vivo*, interact with one or more molecules, such as but not limited to, peptides, proteins, hormones, cofactors and nucleic acids. For the purposes of this discussion, such cellular and extracellular molecules are referred to herein as "binding partners" or marker "substrate".

One necessary embodiment of the invention in order to facilitate such screening is the use of the marker to identify its natural *in vivo* binding partners. There are many ways to accomplish this which are known to one skilled in the art. One example is the use of the marker protein as "bait protein" in a two-hybrid assay or three-hybrid assay (see, *e.g.*, U.S. Patent No. 5,283,317; Zervos *et al*, 1993, *Cell* 72:223-232; Madura *et al*, 1993, *J. Biol. Chem.* 268:12046-12054; Bartel *et al* ,1993, *Biotechniques* 14:920-924; Iwabuchi *et al*, 1993 *Oncogene* 8:1693-1696; Brent WO94/10300) in order to identify other proteins which bind to or interact with the marker (binding partners) and, therefore, are possibly involved in the natural function of the marker. Such marker binding partners are also likely to be involved in the propagation of signals by the marker or downstream elements of a marker-mediated signaling pathway. Alternatively, such marker binding partners may also be found to be inhibitors of the marker.

The two-hybrid system is based on the modular nature of most transcription factors, which consist of separable DNA-binding and activation domains. Briefly, the assay utilizes two different DNA constructs. In one construct, the gene that encodes a marker protein fused to a gene encoding the DNA binding domain of a known transcription factor (*e.g.*, GAL-4). In the other construct, a DNA sequence, from a library of DNA sequences, that encodes an unidentified protein ("prey" or "sample") is fused to a gene that codes for the activation domain of the known transcription factor. If the "bait" and the "prey" proteins are able to interact, *in vivo,* forming a marker-dependent complex, the DNA-binding and activation domains of the transcription factor are brought into close proximity. This proximity allows transcription of a reporter gene (*e.g.*, LacZ) which is operably linked to a transcriptional regulatory site responsive to the transcription factor. Expression of the reporter gene can be readily detected and cell colonies containing the functional transcription factor can be isolated and used to obtain the cloned gene which encodes the protein which interacts with the marker protein.

In a further embodiment, assays may be devised through the use of the invention for the purpose of identifying compounds which modulate (*e.g.*, affect either positively or negatively) interactions between a marker and its substrates and/or binding partners. Such compounds can include, but are not limited to, molecules such as antibodies, peptides, hormones, oligonucleotides, nucleic acids, and analogs thereof. Such compounds may also be obtained from any available source, including systematic

libraries of natural and/or synthetic compounds. The preferred assay components for use in this embodiment is an ovarian cancer marker identified herein, the known binding partner and/or substrate of same, and the test compound. Test compounds can be supplied from any source.

The basic principle of the assay systems used to identify compounds that interfere with the interaction between the marker and its binding partner involves preparing a reaction mixture containing the marker and its binding partner under conditions and for a time sufficient to allow the two products to interact and bind, thus forming a complex. In order to test an agent for inhibitory activity, the reaction mixture is prepared in the presence and absence of the test compound. The test compound can be initially included in the reaction mixture, or can be added at a time subsequent to the addition of the marker and its binding partner. Control reaction mixtures are incubated without the test compound or with a placebo. The formation of any complexes between the marker and its binding partner is then detected. The formation of a complex in the control reaction, but less or no such formation in the reaction mixture containing the test compound, indicates that the compound interferes with the interaction of the marker and its binding partner. Conversely, the formation of more complex in the presence of compound than in the control reaction indicates that the compound may enhance interaction of the marker and its binding partner.

The assay for compounds that interfere with the interaction of the marker with its binding partner may be conducted in a heterogeneous or homogeneous format. Heterogeneous assays involve anchoring either the marker or its binding partner onto a solid phase and detecting complexes anchored to the solid phase at the end of the reaction. In homogeneous assays, the entire reaction is carried out in a liquid phase. In either approach, the order of addition of reactants can be varied to obtain different information about the compounds being tested. For example, test compounds that interfere with the interaction between the markers and the binding partners (*e.g.*, by competition) can be identified by conducting the reaction in the presence of the test substance, *i.e.*, by adding the test substance to the reaction mixture prior to or simultaneously with the marker and its interactive binding partner. Alternatively, test compounds that disrupt preformed complexes, *e.g.*, compounds with higher binding constants that displace one of the components from the complex, can be tested by adding

the test compound to the reaction mixture after complexes have been formed. The various formats are briefly described below.

In a heterogeneous assay system, either the marker or its binding partner is anchored onto a solid surface or matrix, while the other corresponding non-anchored component may be labeled, either directly or indirectly. In practice, microtitre plates are often utilized for this approach. The anchored species can be immobilized by a number of methods, either non-covalent or covalent, that are typically well known to one who practices the art. Non-covalent attachment can often be accomplished simply by coating the solid surface with a solution of the marker or its binding partner and drying. Alternatively, an immobilized antibody specific for the assay component to be anchored can be used for this purpose. Such surfaces can often be prepared in advance and stored.

In related embodiments, a fusion protein can be provided which adds a domain that allows one or both of the assay components to be anchored to a matrix. For example, glutathione-S-transferase/marker fusion proteins or glutathione-S-transferase/binding partner can be adsorbed onto glutathione sepharose beads (Sigma Chemical, St. Louis, MO) or glutathione derivatized microtiter plates, which are then combined with the test compound or the test compound and either the non-adsorbed marker or its binding partner, and the mixture incubated under conditions conducive to complex formation (*e.g.*, physiological conditions). Following incubation, the beads or microtiter plate wells are washed to remove any unbound assay components, the immobilized complex assessed either directly or indirectly, for example, as described above. Alternatively, the complexes can be dissociated from the matrix, and the level of marker binding or activity determined using standard techniques.

Other techniques for immobilizing proteins on matrices can also be used in the screening assays of the invention. For example, either a marker or a marker binding partner can be immobilized utilizing conjugation of biotin and streptavidin. Biotinylated marker protein or target molecules can be prepared from biotin-NHS (N-hydroxy-succinimide) using techniques known in the art (*e.g.*, biotinylation kit, Pierce Chemicals, Rockford, IL), and immobilized in the wells of streptavidin-coated 96 well plates (Pierce Chemical). In certain embodiments, the protein-immobilized surfaces can be prepared in advance and stored.

In order to conduct the assay, the corresponding partner of the immobilized assay component is exposed to the coated surface with or without the test compound. After the reaction is complete, unreacted assay components are removed (*e.g.*, by washing) and any complexes formed will remain immobilized on the solid surface. The detection of complexes anchored on the solid surface can be accomplished in a number of ways. Where the non-immobilized component is pre-labeled, the detection of label immobilized on the surface indicates that complexes were formed. Where the non-immobilized component is not pre-labeled, an indirect label can be used to detect complexes anchored on the surface; *e.g.*, using a labeled antibody specific for the initially non-immobilized species (the antibody, in turn, can be directly labeled or indirectly labeled with, *e.g.*, a labeled anti-Ig antibody). Depending upon the order of addition of reaction components, test compounds which modulate (inhibit or enhance) complex formation or which disrupt preformed complexes can be detected.

In an alternate embodiment of the invention, a homogeneous assay may be used. This is typically a reaction, analogous to those mentioned above, which is conducted in a liquid phase in the presence or absence of the test compound. The formed complexes are then separated from unreacted components, and the amount of complex formed is determined. As mentioned for heterogeneous assay systems, the order of addition of reactants to the liquid phase can yield information about which test compounds modulate (inhibit or enhance) complex formation and which disrupt preformed complexes.

In such a homogeneous assay, the reaction products may be separated from unreacted assay components by any of a number of standard techniques, including but not limited to: differential centrifugation, chromatography, electrophoresis and immunoprecipitation. In differential centrifugation, complexes of molecules may be separated from uncomplexed molecules through a series of centrifugal steps, due to the different sedimentation equilibria of complexes based on their different sizes and densities (see, for example, Rivas, G., and Minton, A.P., *Trends Biochem Sci* 1993 Aug;18(8):284-7). Standard chromatographic techniques may also be utilized to separate complexed molecules from uncomplexed ones. For example, gel filtration chromatography separates molecules based on size, and through the utilization of an appropriate gel filtration resin in a column format, for example, the relatively larger

complex may be separated from the relatively smaller uncomplexed components. Similarly, the relatively different charge properties of the complex as compared to the uncomplexed molecules may be exploited to differentially separate the complex from the remaining individual reactants, for example through the use of ion-exchange chromatography resins. Such resins and chromatographic techniques are well known to one skilled in the art (see, *e.g.,* Heegaard, 1998, *J Mol. Recognit.* 11:141-148; Hage and Tweed, 1997, *J. Chromatogr. B. Biomed. Sci. Appl.,* 699:499-525). Gel electrophoresis may also be employed to separate complexed molecules from unbound species (see, *e.g.,* Ausubel *et al* (eds.), In: Current Protocols in Molecular Biology, J. Wiley & Sons, New York. 1999). In this technique, protein or nucleic acid complexes are separated based on size or charge, for example. In order to maintain the binding interaction during the electrophoretic process, nondenaturing gels in the absence of reducing agent are typically preferred, but conditions appropriate to the particular interactants will be well known to one skilled in the art. Immunoprecipitation is another common technique utilized for the isolation of a protein-protein complex from solution (see, *e.g.,* Ausubel *et al* (eds.), In: Current Protocols in Molecular Biology, J. Wiley & Sons, New York. 1999). In this technique, all proteins binding to an antibody specific to one of the binding molecules are precipitated from solution by conjugating the antibody to a polymer bead that may be readily collected by centrifugation. The bound assay components are released from the beads (through a specific proteolysis event or other technique well known in the art which will not disturb the protein-protein interaction in the complex), and a second immunoprecipitation step is performed, this time utilizing antibodies specific for the correspondingly different interacting assay component. In this manner, only formed complexes should remain attached to the beads. Variations in complex formation in both the presence and the absence of a test compound can be compared, thus offering information about the ability of the compound to modulate interactions between the marker and its binding partner.

Also within the scope of the present invention are methods for direct detection of interactions between the marker and its natural binding partner and/or a test compound in a homogeneous or heterogeneous assay system without further sample manipulation. For example, the technique of fluorescence energy transfer may be utilized (see, *e.g.,* Lakowicz *et al,* U.S. Patent No. 5,631,169; Stavrianopoulos *et al,* U.S. Patent No.

4,868,103). Generally, this technique involves the addition of a fluorophore label on a first 'donor' molecule (*e.g.*, marker or test compound) such that its emitted fluorescent energy will be absorbed by a fluorescent label on a second, 'acceptor' molecule (*e.g.*, marker or test compound), which in turn is able to fluoresce due to the absorbed energy. Alternately, the 'donor' protein molecule may simply utilize the natural fluorescent energy of tryptophan residues. Labels are chosen that emit different wavelengths of light, such that the 'acceptor' molecule label may be differentiated from that of the 'donor'. Since the efficiency of energy transfer between the labels is related to the distance separating the molecules, spatial relationships between the molecules can be assessed. In a situation in which binding occurs between the molecules, the fluorescent emission of the 'acceptor' molecule label in the assay should be maximal. An FET binding event can be conveniently measured through standard fluorometric detection means well known in the art (*e.g.*, using a fluorimeter). A test substance which either enhances or hinders participation of one of the species in the preformed complex will result in the generation of a signal variant to that of background. In this way, test substances that modulate interactions between a marker and its binding partner can be identified in controlled assays.

In another embodiment, modulators of marker expression are identified in a method wherein a cell is contacted with a candidate compound and the expression of mRNA or protein, corresponding to a marker in the cell, is determined. The level of expression of mRNA or protein in the presence of the candidate compound is compared to the level of expression of mRNA or protein in the absence of the candidate compound. The candidate compound can then be identified as a modulator of marker expression based on this comparison. For example, when expression of marker mRNA or protein is greater (statistically significantly greater) in the presence of the candidate compound than in its absence, the candidate compound is identified as a stimulator of marker mRNA or protein expression. Conversely, when expression of marker mRNA or protein is less (statistically significantly less) in the presence of the candidate compound than in its absence, the candidate compound is identified as an inhibitor of marker mRNA or protein expression. The level of marker mRNA or protein expression in the cells can be determined by methods described herein for detecting marker mRNA or protein.

In another aspect, the invention pertains to a combination of two or more of the assays described herein. For example, a modulating agent can be identified using a cell-based or a cell free assay, and the ability of the agent to modulate the activity of a marker protein can be further confirmed *in vivo*, *e.g.*, in a whole animal model for cellular transformation and/or tumorigenesis.

This invention further pertains to novel agents identified by the above-described screening assays. Accordingly, it is within the scope of this invention to further use an agent identified as described herein in an appropriate animal model. For example, an agent identified as described herein (*e.g.*, an marker modulating agent, an antisense marker nucleic acid molecule, an marker-specific antibody, or an marker-binding partner) can be used in an animal model to determine the efficacy, toxicity, or side effects of treatment with such an agent. Alternatively, an agent identified as described herein can be used in an animal model to determine the mechanism of action of such an agent. Furthermore, this invention pertains to uses of novel agents identified by the above-described screening assays for treatments as described herein.

It is understood that appropriate doses of small molecule agents and protein or polypeptide agents depends upon a number of factors within the knowledge of the ordinarily skilled physician, veterinarian, or researcher. The dose(s) of these agents will vary, for example, depending upon the identity, size, and condition of the subject or sample being treated, further depending upon the route by which the composition is to be administered, if applicable, and the effect which the practitioner desires the agent to have upon the nucleic acid or polypeptide of the invention. Exemplary doses of a small molecule include milligram or microgram amounts per kilogram of subject or sample weight (*e.g.* about 1 microgram per kilogram to about 500 milligrams per kilogram, about 100 micrograms per kilogram to about 5 milligrams per kilogram, or about 1 microgram per kilogram to about 50 micrograms per kilogram). Exemplary doses of a protein or polypeptide include gram, milligram or microgram amounts per kilogram of subject or sample weight (*e.g.* about 1 microgram per kilogram to about 5 grams per kilogram, about 100 micrograms per kilogram to about 500 milligrams per kilogram, or about 1 milligram per kilogram to about 50 milligrams per kilogram). It is furthermore understood that appropriate doses of one of these agents depend upon the potency of the agent with respect to the expression or activity to be modulated. Such appropriate doses

can be determined using the assays described herein. When one or more of these agents is to be administered to an animal (*e.g.* a human) in order to modulate expression or activity of a polypeptide or nucleic acid of the invention, a physician, veterinarian, or researcher can, for example, prescribe a relatively low dose at first, subsequently increasing the dose until an appropriate response is obtained. In addition, it is understood that the specific dose level for any particular animal subject will depend upon a variety of factors including the activity of the specific agent employed, the age, body weight, general health, gender, and diet of the subject, the time of administration, the route of administration, the rate of excretion, any drug combination, and the degree of expression or activity to be modulated.

A pharmaceutical composition of the invention is formulated to be compatible with its intended route of administration. Examples of routes of administration include parenteral, *e.g.*, intravenous, intradermal, subcutaneous, oral (*e.g.*, inhalation), transdermal (topical), transmucosal, and rectal administration. Solutions or suspensions used for parenteral, intradermal, or subcutaneous application can include the following components: a sterile diluent such as water for injection, saline solution, fixed oils, polyethylene glycols, glycerine, propylene glycol or other synthetic solvents; antibacterial agents such as benzyl alcohol or methyl parabens; antioxidants such as ascorbic acid or sodium bisulfite; chelating agents such as ethylenediamine-tetraacetic acid; buffers such as acetates, citrates or phosphates and agents for the adjustment of tonicity such as sodium chloride or dextrose. pH can be adjusted with acids or bases, such as hydrochloric acid or sodium hydroxide. The parenteral preparation can be enclosed in ampules, disposable syringes or multiple dose vials made of glass or plastic.

Pharmaceutical compositions suitable for injectable use include sterile aqueous solutions (where water soluble) or dispersions and sterile powders for the extemporaneous preparation of sterile injectable solutions or dispersions. For intravenous administration, suitable carriers include physiological saline, bacteriostatic water, Cremophor EL (BASF; Parsippany, NJ) or phosphate buffered saline (PBS). In all cases, the composition must be sterile and should be fluid to the extent that easy syringability exists. It must be stable under the conditions of manufacture and storage and must be preserved against the contaminating action of microorganisms such as bacteria and fungi. The carrier can be a solvent or dispersion medium containing, for

example, water, ethanol, polyol (for example, glycerol, propylene glycol, and liquid polyethylene glycol, and the like), and suitable mixtures thereof. The proper fluidity can be maintained, for example, by the use of a coating such as lecithin, by the maintenance of the required particle size in the case of dispersion and by the use of surfactants. Prevention of the action of microorganisms can be achieved by various antibacterial and antifungal agents, for example, parabens, chlorobutanol, phenol, ascorbic acid, thimerosal, and the like. In many cases, it will be preferable to include isotonic agents, for example, sugars, polyalcohols such as mannitol, sorbitol, or sodium chloride in the composition. Prolonged absorption of the injectable compositions can be brought about by including in the composition an agent which delays absorption, for example, aluminum monostearate and gelatin.

Sterile injectable solutions can be prepared by incorporating the active compound (*e.g.*, a polypeptide or antibody) in the required amount in an appropriate solvent with one or a combination of ingredients enumerated above, as required, followed by filtered sterilization. Generally, dispersions are prepared by incorporating the active compound into a sterile vehicle which contains a basic dispersion medium, and then incorporating the required other ingredients from those enumerated above. In the case of sterile powders for the preparation of sterile injectable solutions, the preferred methods of preparation are vacuum drying and freeze-drying which yields a powder of the active ingredient plus any additional desired ingredient from a previously sterile-filtered solution thereof.

Oral compositions generally include an inert diluent or an edible carrier. They can be enclosed in gelatin capsules or compressed into tablets. For the purpose of oral therapeutic administration, the active compound can be incorporated with excipients and used in the form of tablets, troches, or capsules. Oral compositions can also be prepared using a fluid carrier for use as a mouthwash, wherein the compound in the fluid carrier is applied orally and swished and expectorated or swallowed.

Pharmaceutically compatible binding agents, and/or adjuvant materials can be included as part of the composition. The tablets, pills, capsules, troches, and the like can contain any of the following ingredients, or compounds of a similar nature: a binder such as microcrystalline cellulose, gum tragacanth or gelatin; an excipient such as starch or lactose, a disintegrating agent such as alginic acid, Primogel, or corn starch; a

lubricant such as magnesium stearate or Sterotes; a glidant such as colloidal silicon dioxide; a sweetening agent such as sucrose or saccharin; or a flavoring agent such as peppermint, methyl salicylate, or orange flavoring.

For administration by inhalation, the compounds are delivered in the form of an aerosol spray from a pressurized container or dispenser which contains a suitable propellant, *e.g.*, a gas such as carbon dioxide, or a nebulizer.

Systemic administration can also be by transmucosal or transdermal means. For transmucosal or transdermal administration, penetrants appropriate to the barrier to be permeated are used in the formulation. Such penetrants are generally known in the art, and include, for example, for transmucosal administration, detergents, bile salts, and fusidic acid derivatives. Transmucosal administration can be accomplished through the use of nasal sprays or suppositories. For transdermal administration, the active compounds are formulated into ointments, salves, gels, or creams as generally known in the art.

The compounds can also be prepared in the form of suppositories (*e.g.*, with conventional suppository bases such as cocoa butter and other glycerides) or retention enemas for rectal delivery.

In one embodiment, the active compounds are prepared with carriers that will protect the compound against rapid elimination from the body, such as a controlled release formulation, including implants and microencapsulated delivery systems. Biodegradable, biocompatible polymers can be used, such as ethylene vinyl acetate, polyanhydrides, polyglycolic acid, collagen, polyorthoesters, and polylactic acid. Methods for preparation of such formulations will be apparent to those skilled in the art. The materials can also be obtained commercially from Alza Corporation and Nova Pharmaceuticals, Inc. Liposomal suspensions (including liposomes having monoclonal antibodies incorporated therein or thereon) can also be used as pharmaceutically acceptable carriers. These can be prepared according to methods known to those skilled in the art, for example, as described in U.S. Patent No. 4,522,811.

It is especially advantageous to formulate oral or parenteral compositions in dosage unit form for ease of administration and uniformity of dosage. Dosage unit form as used herein refers to physically discrete units suited as unitary dosages for the subject to be treated; each unit containing a predetermined quantity of active compound

calculated to produce the desired therapeutic effect in association with the required pharmaceutical carrier. The specification for the dosage unit forms of the invention are dictated by and directly dependent on the unique characteristics of the active compound and the particular therapeutic effect to be achieved, and the limitations inherent in the art of compounding such an active compound for the treatment of individuals.

For antibodies, the preferred dosage is 0.1 mg/kg to 100 mg/kg of body weight (generally 10 mg/kg to 20 mg/kg). If the antibody is to act in the brain, a dosage of 50 mg/kg to 100 mg/kg is usually appropriate. Generally, partially human antibodies and fully human antibodies have a longer half-life within the human body than other antibodies. Accordingly, lower dosages and less frequent administration is often possible. Modifications such as lipidation can be used to stabilize antibodies and to enhance uptake and tissue penetration (*e.g.*, into the ovarian epithelium). A method for lipidation of antibodies is described by Cruikshank *et al.* (1997) *J. Acquired Immune Deficiency Syndromes and Human Retrovirology* 14:193.

The nucleic acid molecules corresponding to a marker of the invention can be inserted into vectors and used as gene therapy vectors. Gene therapy vectors can be delivered to a subject by, for example, intravenous injection, local administration (U.S. Patent 5,328,470), or by stereotactic injection (see, *e.g.*, Chen *et al.*, 1994, *Proc. Natl. Acad. Sci. USA* 91:3054-3057). The pharmaceutical preparation of the gene therapy vector can include the gene therapy vector in an acceptable diluent, or can comprise a slow release matrix in which the gene delivery vehicle is imbedded. Alternatively, where the complete gene delivery vector can be produced intact from recombinant cells, *e.g.* retroviral vectors, the pharmaceutical preparation can include one or more cells which produce the gene delivery system.

The pharmaceutical compositions can be included in a container, pack, or dispenser together with instructions for administration.

V. Predictive Medicine

The present invention pertains to the field of predictive medicine in which diagnostic assays, prognostic assays, pharmacogenomics, and monitoring clinical trails are used for prognostic (predictive) purposes to thereby treat an individual prophylactically. Accordingly, one aspect of the present invention relates to diagnostic

assays for determining the level of expression of polypeptides or nucleic acids corresponding to one or more markers of the invention, in order to determine whether an individual is at risk of developing ovarian cancer. Such assays can be used for prognostic or predictive purposes to thereby prophylactically treat an individual prior to the onset of the cancer.

Yet another aspect of the invention pertains to monitoring the influence of agents (*e.g.*, drugs or other compounds administered either to inhibit ovarian cancer or to treat or prevent any other disorder {*i.e.* in order to understand any ovarian carcinogenic effects that such treatment may have}) on the expression or activity of a marker of the invention in clinical trials. These and other agents are described in further detail in the following sections.

A. Diagnostic Assays

An exemplary method for detecting the presence or absence of a polypeptide or nucleic acid corresponding to a marker of the invention in a biological sample involves obtaining a biological sample (*e.g.* an ovary-associated body fluid) from a test subject and contacting the biological sample with a compound or an agent capable of detecting the polypeptide or nucleic acid (*e.g.*, mRNA, genomic DNA, or cDNA). The detection methods of the invention can thus be used to detect mRNA, protein, cDNA, or genomic DNA, for example, in a biological sample *in vitro* as well as *in vivo*. For example, *in vitro* techniques for detection of mRNA include Northern hybridizations and *in situ* hybridizations. *In vitro* techniques for detection of a polypeptide corresponding to a marker of the invention include enzyme linked immunosorbent assays (ELISAs), Western blots, immunoprecipitations and immunofluorescence. *In vitro* techniques for detection of genomic DNA include Southern hybridizations. Furthermore, *in vivo* techniques for detection of a polypeptide corresponding to a marker of the invention include introducing into a subject a labeled antibody directed against the polypeptide. For example, the antibody can be labeled with a radioactive marker whose presence and location in a subject can be detected by standard imaging techniques.

A general principle of such diagnostic and prognostic assays involves preparing a sample or reaction mixture that may contain a marker, and a probe, under appropriate conditions and for a time sufficient to allow the marker and probe to interact and bind,

thus forming a complex that can be removed and/or detected in the reaction mixture. These assays can be conducted in a variety of ways.

For example, one method to conduct such an assay would involve anchoring the marker or probe onto a solid phase support, also referred to as a substrate, and detecting target marker/probe complexes anchored on the solid phase at the end of the reaction. In one embodiment of such a method, a sample from a subject, which is to be assayed for presence and/or concentration of marker, can be anchored onto a carrier or solid phase support. In another embodiment, the reverse situation is possible, in which the probe can be anchored to a solid phase and a sample from a subject can be allowed to react as an unanchored component of the assay.

There are many established methods for anchoring assay components to a solid phase. These include, without limitation, marker or probe molecules which are immobilized through conjugation of biotin and streptavidin. Such biotinylated assay components can be prepared from biotin-NHS (N-hydroxy-succinimide) using techniques known in the art (*e.g.*, biotinylation kit, Pierce Chemicals, Rockford, IL), and immobilized in the wells of streptavidin-coated 96 well plates (Pierce Chemical). In certain embodiments, the surfaces with immobilized assay components can be prepared in advance and stored.

Other suitable carriers or solid phase supports for such assays include any material capable of binding the class of molecule to which the marker or probe belongs. Well-known supports or carriers include, but are not limited to, glass, polystyrene, nylon, polypropylene, nylon, polyethylene, dextran, amylases, natural and modified celluloses, polyacrylamides, gabbros, and magnetite.

In order to conduct assays with the above mentioned approaches, the non-immobilized component is added to the solid phase upon which the second component is anchored. After the reaction is complete, uncomplexed components may be removed (*e.g.*, by washing) under conditions such that any complexes formed will remain immobilized upon the solid phase. The detection of marker/probe complexes anchored to the solid phase can be accomplished in a number of methods outlined herein.

In a preferred embodiment, the probe, when it is the unanchored assay component, can be labeled for the purpose of detection and readout of the assay, either directly or indirectly, with detectable labels discussed herein and which are well-known to one skilled in the art.

It is also possible to directly detect marker/probe complex formation without further manipulation or labeling of either component (marker or probe), for example by utilizing the technique of fluorescence energy transfer (see, for example, Lakowicz *et al.*, U.S. Patent No. 5,631,169; Stavrianopoulos, *et al.*, U.S. Patent No. 4,868,103). A fluorophore label on the first, 'donor' molecule is selected such that, upon excitation with incident light of appropriate wavelength, its emitted fluorescent energy will be absorbed by a fluorescent label on a second 'acceptor' molecule, which in turn is able to fluoresce due to the absorbed energy. Alternately, the 'donor' protein molecule may simply utilize the natural fluorescent energy of tryptophan residues. Labels are chosen that emit different wavelengths of light, such that the 'acceptor' molecule label may be differentiated from that of the 'donor'. Since the efficiency of energy transfer between the labels is related to the distance separating the molecules, spatial relationships between the molecules can be assessed. In a situation in which binding occurs between the molecules, the fluorescent emission of the 'acceptor' molecule label in the assay should be maximal. An FET binding event can be conveniently measured through standard fluorometric detection means well known in the art (*e.g.*, using a fluorimeter).

In another embodiment, determination of the ability of a probe to recognize a marker can be accomplished without labeling either assay component (probe or marker) by utilizing a technology such as real-time Biomolecular Interaction Analysis (BIA) (see, *e.g.*, Sjolander, S. and Urbaniczky, C., 1991, *Anal. Chem.* 63:2338-2345 and Szabo *et al.*, 1995, *Curr. Opin. Struct. Biol.* 5:699-705). As used herein, "BIA" or "surface plasmon resonance" is a technology for studying biospecific interactions in real time, without labeling any of the interactants (*e.g.*, BIAcore). Changes in the mass at the binding surface (indicative of a binding event) result in alterations of the refractive index of light near the surface (the optical phenomenon of surface plasmon resonance (SPR)), resulting in a detectable signal which can be used as an indication of real-time reactions between biological molecules.

Alternatively, in another embodiment, analogous diagnostic and prognostic assays can be conducted with marker and probe as solutes in a liquid phase. In such an assay, the complexed marker and probe are separated from uncomplexed components by any of a number of standard techniques, including but not limited to: differential centrifugation, chromatography, electrophoresis and immunoprecipitation. In differential centrifugation, marker/probe complexes may be separated from uncomplexed assay components through a series of centrifugal steps, due to the different sedimentation equilibria of complexes based on their different sizes and densities (see, for example, Rivas, G., and Minton, A.P., 1993, *Trends Biochem Sci.* 18(8):284-7). Standard chromatographic techniques may also be utilized to separate complexed molecules from uncomplexed ones. For example, gel filtration chromatography separates molecules based on size, and through the utilization of an appropriate gel filtration resin in a column format, for example, the relatively larger complex may be separated from the relatively smaller uncomplexed components. Similarly, the relatively different charge properties of the marker/probe complex as compared to the uncomplexed components may be exploited to differentiate the complex from uncomplexed components, for example through the utilization of ion-exchange chromatography resins. Such resins and chromatographic techniques are well known to one skilled in the art (see, *e.g.*, Heegaard, N.H., 1998, *J. Mol. Recognit.* Winter 11(1-6):141-8; Hage, D.S., and Tweed, S.A. *J Chromatogr B Biomed Sci Appl* 1997 Oct 10;699(1-2):499-525). Gel electrophoresis may also be employed to separate complexed assay components from unbound components (see, *e.g.*, Ausubel *et al.*, ed., *Current Protocols in Molecular Biology*, John Wiley & Sons, New York, 1987-1999). In this technique, protein or nucleic acid complexes are separated based on size or charge, for example. In order to maintain the binding interaction during the electrophoretic process, non-denaturing gel matrix materials and conditions in the absence of reducing agent are typically preferred. Appropriate conditions to the particular assay and components thereof will be well known to one skilled in the art.

In a particular embodiment, the level of mRNA corresponding to the marker can be determined both by *in situ* and by *in vitro* formats in a biological sample using methods known in the art. The term "biological sample" is intended to include tissues, cells, biological fluids and isolates thereof, isolated from a subject, as well as tissues,

cells and fluids present within a subject. Many expression detection methods use isolated RNA. For *in vitro* methods, any RNA isolation technique that does not select against the isolation of mRNA can be utilized for the purification of RNA from ovarian cells (see, *e.g.*, Ausubel *et al.*, ed., *Current Protocols in Molecular Biology*, John Wiley & Sons, New York 1987-1999). Additionally, large numbers of tissue samples can readily be processed using techniques well known to those of skill in the art, such as, for example, the single-step RNA isolation process of Chomczynski (1989, U.S. Patent No. 4,843,155).

The isolated mRNA can be used in hybridization or amplification assays that include, but are not limited to, Southern or Northern analyses, polymerase chain reaction analyses and probe arrays. One preferred diagnostic method for the detection of mRNA levels involves contacting the isolated mRNA with a nucleic acid molecule (probe) that can hybridize to the mRNA encoded by the gene being detected. The nucleic acid probe can be, for example, a full-length cDNA, or a portion thereof, such as an oligonucleotide of at least 7, 15, 30, 50, 100, 250 or 500 nucleotides in length and sufficient to specifically hybridize under stringent conditions to a mRNA or genomic DNA encoding a marker of the present invention. Other suitable probes for use in the diagnostic assays of the invention are described herein. Hybridization of an mRNA with the probe indicates that the marker in question is being expressed.

In one format, the mRNA is immobilized on a solid surface and contacted with a probe, for example by running the isolated mRNA on an agarose gel and transferring the mRNA from the gel to a membrane, such as nitrocellulose. In an alternative format, the probe(s) are immobilized on a solid surface and the mRNA is contacted with the probe(s), for example, in an Affymetrix gene chip array. A skilled artisan can readily adapt known mRNA detection methods for use in detecting the level of mRNA encoded by the markers of the present invention.

An alternative method for determining the level of mRNA corresponding to a marker of the present invention in a sample involves the process of nucleic acid amplification, *e.g.*, by rtPCR (the experimental embodiment set forth in Mullis, 1987, U.S. Patent No. 4,683,202), ligase chain reaction (Barany, 1991, *Proc. Natl. Acad. Sci. USA*, 88:189-193), self sustained sequence replication (Guatelli *et al.*, 1990, *Proc. Natl. Acad. Sci. USA* 87:1874-1878), transcriptional amplification system (Kwoh *et al.*, 1989,

Proc. Natl. Acad. Sci. USA 86:1173-1177), Q-Beta Replicase (Lizardi *et al.*, 1988, *Bio/Technology* 6:1197), rolling circle replication (Lizardi *et al.*, U.S. Patent No. 5,854,033) or any other nucleic acid amplification method, followed by the detection of the amplified molecules using techniques well known to those of skill in the art. These detection schemes are especially useful for the detection of nucleic acid molecules if such molecules are present in very low numbers. As used herein, amplification primers are defined as being a pair of nucleic acid molecules that can anneal to 5' or 3' regions of a gene (plus and minus strands, respectively, or vice-versa) and contain a short region in between. In general, amplification primers are from about 10 to 30 nucleotides in length and flank a region from about 50 to 200 nucleotides in length. Under appropriate conditions and with appropriate reagents, such primers permit the amplification of a nucleic acid molecule comprising the nucleotide sequence flanked by the primers.

For *in situ* methods, mRNA does not need to be isolated from the ovarian cells prior to detection. In such methods, a cell or tissue sample is prepared/processed using known histological methods. The sample is then immobilized on a support, typically a glass slide, and then contacted with a probe that can hybridize to mRNA that encodes the marker.

As an alternative to making determinations based on the absolute expression level of the marker, determinations may be based on the normalized expression level of the marker. Expression levels are normalized by correcting the absolute expression level of a marker by comparing its expression to the expression of a gene that is not a marker, *e.g.*, a housekeeping gene that is constitutively expressed. Suitable genes for normalization include housekeeping genes such as the actin gene, or epithelial cell-specific genes. This normalization allows the comparison of the expression level in one sample, *e.g.*, a patient sample, to another sample, *e.g.*, a non-ovarian cancer sample, or between samples from different sources.

Alternatively, the expression level can be provided as a relative expression level. To determine a relative expression level of a marker, the level of expression of the marker is determined for 10 or more samples of normal versus cancer cell isolates, preferably 50 or more samples, prior to the determination of the expression level for the sample in question. The mean expression level of each of the genes assayed in the larger number of samples is determined and this is used as a baseline expression level

for the marker. The expression level of the marker determined for the test sample (absolute level of expression) is then divided by the mean expression value obtained for that marker. This provides a relative expression level.

Preferably, the samples used in the baseline determination will be from ovarian cancer or from non-ovarian cancer cells of ovarian tissue. The choice of the cell source is dependent on the use of the relative expression level. Using expression found in normal tissues as a mean expression score aids in validating whether the marker assayed is ovarian specific (versus normal cells). In addition, as more data is accumulated, the mean expression value can be revised, providing improved relative expression values based on accumulated data. Expression data from ovarian cells provides a means for grading the severity of the ovarian cancer state.

In another embodiment of the present invention, a polypeptide corresponding to a marker is detected. A preferred agent for detecting a polypeptide of the invention is an antibody capable of binding to a polypeptide corresponding to a marker of the invention, preferably an antibody with a detectable label. Antibodies can be polyclonal, or more preferably, monoclonal. An intact antibody, or a fragment thereof (*e.g.*, Fab or $F(ab')_2$) can be used. The term "labeled", with regard to the probe or antibody, is intended to encompass direct labeling of the probe or antibody by coupling (*i.e.*, physically linking) a detectable substance to the probe or antibody, as well as indirect labeling of the probe or antibody by reactivity with another reagent that is directly labeled. Examples of indirect labeling include detection of a primary antibody using a fluorescently labeled secondary antibody and end-labeling of a DNA probe with biotin such that it can be detected with fluorescently labeled streptavidin.

Proteins from ovarian cells can be isolated using techniques that are well known to those of skill in the art. The protein isolation methods employed can, for example, be such as those described in Harlow and Lane (Harlow and Lane, 1988, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York).

A variety of formats can be employed to determine whether a sample contains a protein that binds to a given antibody. Examples of such formats include, but are not limited to, enzyme immunoassay (EIA), radioimmunoassay (RIA), Western blot analysis and enzyme linked immunoabsorbant assay (ELISA). A skilled artisan can

readily adapt known protein/antibody detection methods for use in determining whether ovarian cells express a marker of the present invention.

In one format, antibodies, or antibody fragments, can be used in methods such as Western blots or immunofluorescence techniques to detect the expressed proteins. In such uses, it is generally preferable to immobilize either the antibody or proteins on a solid support. Suitable solid phase supports or carriers include any support capable of binding an antigen or an antibody. Well-known supports or carriers include glass, polystyrene, polypropylene, polyethylene, dextran, nylon, amylases, natural and modified celluloses, polyacrylamides, gabbros, and magnetite.

One skilled in the art will know many other suitable carriers for binding antibody or antigen, and will be able to adapt such support for use with the present invention. For example, protein isolated from ovarian cells can be run on a polyacrylamide gel electrophoresis and immobilized onto a solid phase support such as nitrocellulose. The support can then be washed with suitable buffers followed by treatment with the detectably labeled antibody. The solid phase support can then be washed with the buffer a second time to remove unbound antibody. The amount of bound label on the solid support can then be detected by conventional means.

The invention also encompasses kits for detecting the presence of a polypeptide or nucleic acid corresponding to a marker of the invention in a biological sample (*e.g.* an ovary-associated body fluid such as a urine sample). Such kits can be used to determine if a subject is suffering from or is at increased risk of developing ovarian cancer. For example, the kit can comprise a labeled compound or agent capable of detecting a polypeptide or an mRNA encoding a polypeptide corresponding to a marker of the invention in a biological sample and means for determining the amount of the polypeptide or mRNA in the sample (*e.g.*, an antibody which binds the polypeptide or an oligonucleotide probe which binds to DNA or mRNA encoding the polypeptide). Kits can also include instructions for interpreting the results obtained using the kit.

For antibody-based kits, the kit can comprise, for example: (1) a first antibody (*e.g.*, attached to a solid support) which binds to a polypeptide corresponding to a marker of the invention; and, optionally, (2) a second, different antibody which binds to either the polypeptide or the first antibody and is conjugated to a detectable label.

For oligonucleotide-based kits, the kit can comprise, for example: (1) an oligonucleotide, *e.g.*, a detectably labeled oligonucleotide, which hybridizes to a nucleic acid sequence encoding a polypeptide corresponding to a marker of the invention or (2) a pair of primers useful for amplifying a nucleic acid molecule corresponding to a marker of the invention. The kit can also comprise, *e.g.*, a buffering agent, a preservative, or a protein stabilizing agent. The kit can further comprise components necessary for detecting the detectable label (*e.g.*, an enzyme or a substrate). The kit can also contain a control sample or a series of control samples which can be assayed and compared to the test sample. Each component of the kit can be enclosed within an individual container and all of the various containers can be within a single package, along with instructions for interpreting the results of the assays performed using the kit.

B. Pharmacogenomics

Agents or modulators which have a stimulatory or inhibitory effect on expression of a marker of the invention can be administered to individuals to treat (prophylactically or therapeutically) ovarian cancer in the patient. In conjunction with such treatment, the pharmacogenomics (*i.e.*, the study of the relationship between an individual's genotype and that individual's response to a foreign compound or drug) of the individual may be considered. Differences in metabolism of therapeutics can lead to severe toxicity or therapeutic failure by altering the relation between dose and blood concentration of the pharmacologically active drug. Thus, the pharmacogenomics of the individual permits the selection of effective agents (*e.g.*, drugs) for prophylactic or therapeutic treatments based on a consideration of the individual's genotype. Such pharmacogenomics can further be used to determine appropriate dosages and therapeutic regimens. Accordingly, the level of expression of a marker of the invention in an individual can be determined to thereby select appropriate agent(s) for therapeutic or prophylactic treatment of the individual.

Pharmacogenomics deals with clinically significant variations in the response to drugs due to altered drug disposition and abnormal action in affected persons. See, *e.g.*, Linder (1997) *Clin. Chem.* 43(2):254-266. In general, two types of pharmacogenetic conditions can be differentiated. Genetic conditions transmitted as a single factor altering the way drugs act on the body are referred to as "altered drug action." Genetic

conditions transmitted as single factors altering the way the body acts on drugs are referred to as "altered drug metabolism". These pharmacogenetic conditions can occur either as rare defects or as polymorphisms. For example, glucose-6-phosphate dehydrogenase (G6PD) deficiency is a common inherited enzymopathy in which the main clinical complication is hemolysis after ingestion of oxidant drugs (anti-malarials, sulfonamides, analgesics, nitrofurans) and consumption of fava beans.

As an illustrative embodiment, the activity of drug metabolizing enzymes is a major determinant of both the intensity and duration of drug action. The discovery of genetic polymorphisms of drug metabolizing enzymes (*e.g.*, N-acetyltransferase 2 (NAT 2) and cytochrome P450 enzymes CYP2D6 and CYP2C19) has provided an explanation as to why some patients do not obtain the expected drug effects or show exaggerated drug response and serious toxicity after taking the standard and safe dose of a drug. These polymorphisms are expressed in two phenotypes in the population, the extensive metabolizer (EM) and poor metabolizer (PM). The prevalence of PM is different among different populations. For example, the gene coding for CYP2D6 is highly polymorphic and several mutations have been identified in PM, which all lead to the absence of functional CYP2D6. Poor metabolizers of CYP2D6 and CYP2C19 quite frequently experience exaggerated drug response and side effects when they receive standard doses. If a metabolite is the active therapeutic moiety, a PM will show no therapeutic response, as demonstrated for the analgesic effect of codeine mediated by its CYP2D6-formed metabolite morphine. The other extreme are the so called ultra-rapid metabolizers who do not respond to standard doses. Recently, the molecular basis of ultra-rapid metabolism has been identified to be due to CYP2D6 gene amplification.

Thus, the level of expression of a marker of the invention in an individual can be determined to thereby select appropriate agent(s) for therapeutic or prophylactic treatment of the individual. In addition, pharmacogenetic studies can be used to apply genotyping of polymorphic alleles encoding drug-metabolizing enzymes to the identification of an individual's drug responsiveness phenotype. This knowledge, when applied to dosing or drug selection, can avoid adverse reactions or therapeutic failure and thus enhance therapeutic or prophylactic efficiency when treating a subject with a modulator of expression of a marker of the invention.

C. Monitoring Clinical Trials

Monitoring the influence of agents (*e.g.*, drug compounds) on the level of expression of a marker of the invention can be applied not only in basic drug screening, but also in clinical trials. For example, the effectiveness of an agent to affect marker expression can be monitored in clinical trials of subjects receiving treatment for ovarian cancer. In a preferred embodiment, the present invention provides a method for monitoring the effectiveness of treatment of a subject with an agent (*e.g.*, an agonist, antagonist, peptidomimetic, protein, peptide, nucleic acid, small molecule, or other drug candidate) comprising the steps of (i) obtaining a pre-administration sample from a subject prior to administration of the agent; (ii) detecting the level of expression of one or more selected markers of the invention in the pre-administration sample; (iii) obtaining one or more post-administration samples from the subject; (iv) detecting the level of expression of the marker(s) in the post-administration samples; (v) comparing the level of expression of the marker(s) in the pre-administration sample with the level of expression of the marker(s) in the post-administration sample or samples; and (vi) altering the administration of the agent to the subject accordingly. For example, increased administration of the agent can be desirable to increase expression of the marker(s) to higher levels than detected, *i.e.*, to increase the effectiveness of the agent. Alternatively, decreased administration of the agent can be desirable to decrease expression of the marker(s) to lower levels than detected, *i.e.*, to decrease the effectiveness of the agent.

D. Surrogate Markers

The markers of the invention may serve as surrogate markers for one or more disorders or disease states or for conditions leading up to disease states, and in particular, ovarian cancer. As used herein, a "surrogate marker" is an objective biochemical marker which correlates with the absence or presence of a disease or disorder, or with the progression of a disease or disorder (*e.g.*, with the presence or absence of a tumor). The presence or quantity of such markers is independent of the disease. Therefore, these markers may serve to indicate whether a particular course of treatment is effective in lessening a disease state or disorder. Surrogate markers are of particular use when the presence or extent of a disease state or disorder is difficult to

assess through standard methodologies (*e.g.*, early stage tumors), or when an assessment of disease progression is desired before a potentially dangerous clinical endpoint is reached (*e.g.*, an assessment of cardiovascular disease may be made using cholesterol levels as a surrogate marker, and an analysis of HIV infection may be made using HIV RNA levels as a surrogate marker, well in advance of the undesirable clinical outcomes of myocardial infarction or fully-developed AIDS). Examples of the use of surrogate markers in the art include: Koomen *et al.* (2000) *J. Mass. Spectrom.* 35: 258-264; and James (1994) *AIDS Treatment News Archive* 209.

The markers of the invention are also useful as pharmacodynamic markers. As used herein, a "pharmacodynamic marker" is an objective biochemical marker which correlates specifically with drug effects. The presence or quantity of a pharmacodynamic marker is not related to the disease state or disorder for which the drug is being administered; therefore, the presence or quantity of the marker is indicative of the presence or activity of the drug in a subject. For example, a pharmacodynamic marker may be indicative of the concentration of the drug in a biological tissue, in that the marker is either expressed or transcribed or not expressed or transcribed in that tissue in relationship to the level of the drug. In this fashion, the distribution or uptake of the drug may be monitored by the pharmacodynamic marker. Similarly, the presence or quantity of the pharmacodynamic marker may be related to the presence or quantity of the metabolic product of a drug, such that the presence or quantity of the marker is indicative of the relative breakdown rate of the drug *in vivo*. Pharmacodynamic markers are of particular use in increasing the sensitivity of detection of drug effects, particularly when the drug is administered in low doses. Since even a small amount of a drug may be sufficient to activate multiple rounds of marker transcription or expression, the amplified marker may be in a quantity which is more readily detectable than the drug itself. Also, the marker may be more easily detected due to the nature of the marker itself; for example, using the methods described herein, antibodies may be employed in an immune-based detection system for a protein marker, or marker-specific radiolabeled probes may be used to detect a mRNA marker. Furthermore, the use of a pharmacodynamic marker may offer mechanism-based prediction of risk due to drug treatment beyond the range of possible direct observations. Examples of the use of pharmacodynamic markers in the art include:

Matsuda *et al.* US 6,033,862; Hattis *et al.* (1991) *Env. Health Perspect.* 90: 229-238; Schentag (1999) *Am. J. Health-Syst. Pharm.* 56 Suppl. 3: S21-S24; and Nicolau (1999) *Am, J. Health-Syst. Pharm.* 56 Suppl. 3: S16-S20.

The markers of the invention are also useful as pharmacogenomic markers. As used herein, a "pharmacogenomic marker" is an objective biochemical marker which correlates with a specific clinical drug response or susceptibility in a subject (see, e.g., McLeod *et al.* (1999) *Eur. J. Cancer* 35(12): 1650-1652). The presence or quantity of the pharmacogenomic marker is related to the predicted response of the subject to a specific drug or class of drugs prior to administration of the drug. By assessing the presence or quantity of one or more pharmacogenomic markers in a subject, a drug therapy which is most appropriate for the subject, or which is predicted to have a greater degree of success, may be selected. For example, based on the presence or quantity of RNA or protein for specific tumor markers in a subject, a drug or course of treatment may be selected that is optimized for the treatment of the specific tumor likely to be present in the subject. Similarly, the presence or absence of a specific sequence mutation in marker DNA may correlate with drug response. The use of pharmacogenomic markers therefore permits the application of the most appropriate treatment for each subject without having to administer the therapy.

E. Computer Readable Means and Arrays

Computer readable media comprising a marker of the present invention is also provided. As used herein, "computer readable media" refers to any medium that can be read and accessed directly by a computer. Such media include, but are not limited to: magnetic storage media, such as floppy discs, hard disc storage medium, and magnetic tape; optical storage media such as CD-ROM; electrical storage media such as RAM and ROM; and hybrids of these categories such as magnetic/optical storage media. The skilled artisan will readily appreciate how any of the presently known computer readable mediums can be used to create a manufacture comprising computer readable medium having recorded thereon a marker of the present invention.

As used herein, "recorded" refers to a process for storing information on computer readable medium. Those skilled in the art can readily adopt any of the presently known methods for recording information on computer readable medium to generate manufactures comprising the markers of the present invention.

A variety of data processor programs and formats can be used to store the marker information of the present invention on computer readable medium. For example, the nucleic acid sequence corresponding to the markers can be represented in a word processing text file, formatted in commercially-available software such as WordPerfect and MicroSoft Word, or represented in the form of an ASCII file, stored in a database application, such as DB2, Sybase, Oracle, or the like. Any number of dataprocessor structuring formats (*e.g.*, text file or database) may be adapted in order to obtain computer readable medium having recorded thereon the markers of the present invention.

By providing the markers of the invention in computer readable form, one can routinely access the marker sequence information for a variety of purposes. For example, one skilled in the art can use the nucleotide or amino acid sequences of the present invention in computer readable form to compare a target sequence or target structural motif with the sequence information stored within the data storage means. Search means are used to identify fragments or regions of the sequences of the invention which match a particular target sequence or target motif.

The invention also includes an array comprising a marker of the present invention. The array can be used to assay expression of one or more genes in the array. In one embodiment, the array can be used to assay gene expression in a tissue to ascertain tissue specificity of genes in the array. In this manner, up to about 7600 genes can be simultaneously assayed for expression. This allows a profile to be developed showing a battery of genes specifically expressed in one or more tissues.

In addition to such qualitative determination, the invention allows the quantitation of gene expression. Thus, not only tissue specificity, but also the level of expression of a battery of genes in the tissue is ascertainable. Thus, genes can be grouped on the basis of their tissue expression *per se* and level of expression in that tissue. This is useful, for example, in ascertaining the relationship of gene expression between or among tissues. Thus, one tissue can be perturbed and the effect on gene

expression in a second tissue can be determined. In this context, the effect of one cell type on another cell type in response to a biological stimulus can be determined. Such a determination is useful, for example, to know the effect of cell-cell interaction at the level of gene expression. If an agent is administered therapeutically to treat one cell type but has an undesirable effect on another cell type, the invention provides an assay to determine the molecular basis of the undesirable effect and thus provides the opportunity to co-administer a counteracting agent or otherwise treat the undesired effect. Similarly, even within a single cell type, undesirable biological effects can be determined at the molecular level. Thus, the effects of an agent on expression of other than the target gene can be ascertained and counteracted.

In another embodiment, the array can be used to monitor the time course of expression of one or more genes in the array. This can occur in various biological contexts, as disclosed herein, for example development and differentiation, tumor progression, progression of other diseases, *in vitro* processes, such a cellular transformation and senescence, autonomic neural and neurological processes, such as, for example, pain and appetite, and cognitive functions, such as learning or memory.

The array is also useful for ascertaining the effect of the expression of a gene on the expression of other genes in the same cell or in different cells. This provides, for example, for a selection of alternate molecular targets for therapeutic intervention if the ultimate or downstream target cannot be regulated.

The array is also useful for ascertaining differential expression patterns of one or more genes in normal and abnormal cells. This provides a battery of genes that could serve as a molecular target for diagnosis or therapeutic intervention.

VI. Experimental Protocol

A. Subtracted Libraries

Subtracted libraries are generated using a PCR based method that allows the isolation of clones expressed at higher levels in one population of mRNA (tester) compared to another population (driver). Both tester and driver mRNA populations are converted into cDNA by reverse transcription, and then PCR amplified using the SMART PCR kit from Clontech. Tester and driver cDNAs are then hybridized using

the PCR-Select cDNA subtraction kit from Clontech. This technique results in both subtraction and normalization, which is an equalization of copy number of low-abundance and high-abundance sequences. After generation of the subtractive libraries, a group of 96 or more clones from each library is tested to confirm differential expression by reverse Southern hybridization.

A first group of regular cDNA libraries was constructed. Library johOa was constructed from a pool of 5 normal ovarian epithelial cell cultures. Library johOb was constructed from a pool of 5 ascites short cultured samples from ovarian cancer patients. Library johOc was constructed from a pool of 6 serous late stage (III/IV) tumor samples. Three subtracted libraries were generated from these libraries: johOd, johOe and johOf . The johOd library was a subtracted ascites library, where the tester was johOb, and the driver was johOa. The johOe and johOf libraries were both subtracted stage III/IV serous tumor libraries. The tester for both of these libraries was johOc, and the driver was a pooled RNA from normal tissues. The tissues used for this driver pool were: kidney, small intestine, prostate, lung, heart, muscle, spleen, pancreas, liver, and lymphocyte. . Library cMhOg was the same as the johOc and johOf libraries, with the exception that normal ovary was added to the driver. cMhOh, i, j, and k are all stage I/II subtracted libraries made from pooled tumor RNAs of different histological types (h=serous, I-endometriod, j=clear cell, k=mucinous). The driver was the same for these 4 libraries. It consisted of normal ovarian epithelial RNA and PBML RNA.

SEQ ID NOS: 1-2795 (Tables 1 and 1A) were identified through the above-described subtractive library hybridization techniques. In Tables 1 and 1A, SEQ ID NOS: 1-773 were from Library johOd; SEQ ID NOS: 774-1331 were from Library johOe; SEQ ID NOS: 1332-2795 were from Libraries johOf.

SEQ ID NOS: 2796-10795 (Table 6) and 10796-10808 (Table 6A) were also identified through the above-described subtractive library hybridization techniques. In Table 6, SEQ ID NOS: 2796-3789 were from Library cMhOg; SEQ ID NOS: 3790-6301 were from Library cMhoh; SEQ ID NOS: 6302-8108 were from Libraries cMhoi; SEQ ID NOS: 8109-9981 were from Library cMhoj; SEQ ID NOS: 9982-10795 were from Libraries cMhok.

B. Transcript Profiling

Nylon arrays were prepared by spotting purified PCR product onto a nylon membrane using a robotic gridding system linked to a sample database. Several thousand clones were spotted on each nylon filter.

RNA or DNA from clinical samples (tumor and normal), and cell lines as well as from subtracted libraries, were used for hybridization against the nylon arrays. The RNA or DNA is labeled utilizing an *in vitro* reverse transcription reaction that contains a radiolabeled nucleotide that is incorporated during the reaction. Hybridization experiments were carried out by combining labeled RNA or DNA samples with nylon filters in a hybridization chamber. Duplicate, independent hybridization experiments were performed to generate transcriptional profiling data. See, *Nature Genetics*, 21 (1999).

C. Proteomics

Proteins that are secreted by normal and transformed cells in culture are analyzed to identify those proteins that are likely to be secreted by cancerous cells into body fluids. Supernatants are isolated and MWT-CO filters are used to simplify the mixture of proteins. The proteins are then digested with trypsin. The tryptic peptides are loaded onto a microcapillary HPLC column where they are separated, and eluted directly into an ion trap mass spectrometer, through a custom-made electrospray ionization source. Throughout the gradient, sequence data is acquired through fragmentation of the four most intense ions (peptides) that elute off the column, while dynamically excluding those that have already been fragmented. In this way, approximately 2000 scans worth of sequence data are obtained, corresponding to approximately 50 to 200 different proteins in the sample. These data are searched against databases using correlation analysis tools, such as MS-Tag, to identify the proteins in the supernatants.

The markers of Tables 7A-7E were identified through the above-described proteomics protocol. In particular, the proteins set forth in Tables 7A-7E were identified and their expression was analyzed in seven short term cultures of ovarian cancer cells (jov891N, jov915N, jov915p6N, jov928N, jov860N, jov908N and jov926N) and six

ovarian cancer cell lines (ov17TotN, ov167TotN, ov177TotN, ov202TotN, ov207TotN and ov266TotN).

D. Identification of Novel Genes

Sequences which displayed an increase in expression in [any one of] twelve late stage ovarian tumor samples over the corresponding average expression of four non-tumor samples were blasted against both public and proprietary sequence databases in order to identify other sequences with significant overlap. Contiguous sequences were then assembled into full length genes (cDNAs). Those cDNAs in which the potential open reading frame was still open at the 5' end were experimentally extended by either 5' RACE PCR or extracted from full length cDNA libraries by a PCR reaction between the vector and 5'end of the assembled electronic sequence. To predict whether an assembled gene encodes a potential integral membrane protein or not, hydropathy predictions of the predicted open reading frame was performed. If the open reading frame contained a predicted signal peptide in the N-terminal portion and a single membrane spanning domain, it was labeled as being a potential type I transmembrane protein. If the predicted amino acid sequence contained a transmembrane domain in the N-terminal portion of the protein, it was labeled as being a potential type II transmembrane protein. If the predicted amino acid sequence was a short hydrophobic protein (<50 amino acids), such as CD52 (CAMPATH), it was labeled as a potential integral membrane protein. If the predicted amino acid sequence contained multiple membrane spanning regions it was labeled as a type III transmembrane protein.

The novel genes of Table 8 were identified through the above-described procedure.

E. Northern Blot Analysis

Northern blots were performed for several of the genes of Table 8 to analyze for expression in normal human tissues. A clone was picked and served as a template for generation of probes for Northern blots. The probes were radiolabeled using ^{32}PdCTP using standard procedures and hybridized to Clontech (Palo Alto, California) human multiple tissue northerns. Clontech Human MTN blot (catalog # 7760-1) contains heart, brain, placenta, lung, liver, skeletal muscle, kidney and pancreas. Human 12-Lane

MTN blot (catalog # 7780-1) contains brain, heart, skeletal muscle, colon, thymus, spleen, kidney, liver, small intestine, placenta, lung, peripheral blood leukocytes. Human MTN blot II (#7759-1) contains spleen, thymus, prostate, testis, ovary, small intestine, colon, and peripheral blood leukocytes. The hybridization and wash conditions used were as described in the Clontech Multiple Tissue Northern (MTN) Blot User Manual (Catalogue number PT1200-1). Kodak biomax film was exposed to the Northern blot membrane for 10-72 hours, which were then developed.

Tables 10A-10N summarize the Northern blot analysis performed for several of the novel genes of Table 8.

F. Gene Expression Analysis

Total RNA from normal human tissue was obtained from commercial sources. The integrity of the RNA was verified by agarose gel electrophoresis and ethidium bromide staining. Cell lines were purchased from ATCC and grown under the conditions recommended by ATCC. Total RNA from a number of various breast, ovarian and prostate adenocarcinoma cell lines was prepared using commercial kits (Qiagen). First strand cDNA was prepared using oligo-dT primer and standard conditions. Each RNA preparation was treated with DNase I (Ambion) at 37°C for 1 hour.

Novel gene expression was measured by TaqMan® quantitative PCR (Perkin Elmer Applied Biosystems) in cDNA prepared from the following normal human tissues: prostate, cerebellum, breast, ovary, kidney, trachea, adipose, small intestine, thyroid, testis, placenta, spinal cord, cervix, esophagus, spleen, thymus, brain, lung, skeletal muscle, heart, mammary gland, salivary gland, stomach, uterus, adrenal gland, bladder, medulla hippocampus, and liver from one or two adult donors. Furthermore, novel gene expression was analyzed in the following cell lines: ZR-75-30, CAMA-1, MDA-MB-157, MDA-MB-175VII, MDA-MB-231, MDA-MB-361, SK-BR-3, BT-483, BT-549, DU4475, Hs578Bst, Hs578T, MDA-MB-453, T-47D, ES-2, Caov-3, SK-OV-3, NIH:OVCAR-3, HTB-78, CRL-1572, CRL-10303, CA-HPV-10, CA-HPV-7, DU145, MCF-7 and MDA-MB-468.

PCR Probes were designed by PrimerExpress software (PE Biosystems) based on the disclosed sequences of each novel human kinase gene. The primers and probes for expression analysis of the novel genes in Table 8 are given below:

Marker 10

Forward primer:	F	GATGACTTGAGAGAAGGTGCACAGT
Reverse primer:	R	AAGGACAAGTGTGTTTGGCTTCA
TaqMan probe:	P	TTTGATGCAGGCTGCTGGTCTTGG

Marker 15

Forward primer:	F	TGCAGCAGCCTGTGTATGC
Reverse primer:	R	AAACAGCGACACGACAGTGAA
TaqMan probe:	P	TTGGCTCCGGTATCGTCAACACGG

Marker 19

Forward primer:	F	AGTTCATCACGATATCAGGGAAGAT
Reverse primer:	R	TGAATGATTACTGCCGATGTAGCT
TaqMan probe:	P	CAAAGAGCCGTACGTCCACTGCCAGA

Marker 5

Forward primer:	F	GGCTGCTTTGCTGCAACTG
Reverse primer:	R	CAGAGCGGGCAGCAGAATA
TaqMan Probe	P	ACCCCGCACAGACAAGCCTTACTCC

Marker 8

Forward primer	F	TGTGTGCTGAAGGCTACATGTTG
Reverse primer	R	TCTCCATGGCTGGTTTCCA
TaqMan Probe	P	TTCTTACACGTCAGGTATTTGTAATCGCCCT

Marker 25

Forward Primer	F	CTCCCACCCCTTCTTCAATG
Reverse primer	R	AGCTGTACTCTGCCGGTTTCTC
TaqMan Probe	P	ACCTTCGACTATGACATCGCGCTGCT

Marker 39

Forward primer	F	CCCGGAATGTGGTTTATGGTATT
Reverse primer	R	GACCGTCTTGTTGTGGAGTGAAG
TaqMan Probe	P	CCTTTCCTTGACCTCTATCGCAACCCGAA

An internal reference gene 18S rRNA was used. Primers and probe were purchased pretested from PE Applied Biosystems. Each gene probe was labeled using FAM (6-carboxyfluorescein), and the β2-microglobulin reference probe was labeled with a different fluorescent dye, VIC. The differential labeling of the target gene and internal reference gene thus enabled measurement in same well. Forward and reverse primers and the probes for both 18S rRNA and target gene were added to the TaqMan® Universal PCR Master Mix (PE Applied Biosystems). Although the final concentration of primer and probe could vary, each was internally consistent within a given experiment. A typical experiment contained 900 nM of forward and reverse primers plus 250nM probe for the target gene whereas primers and probe for 18S rRNA were used according to manufacturer's recommendations. TaqMan matrix experiments were carried out on an ABI PRISM 7700 Sequence Detection System (PE Applied Biosystems). The thermal cycler conditions were as follows: hold for 2 min at 50°C and 10 min at 95°C, followed by two-step PCR for 40 cycles of 95°C for 15 sec followed by 60°C for 1 min.

The following method was used to quantitatively calculate gene expression in the various tissues relative to 18S rRNA expression in the same tissue. The threshold cycle (Ct) value is defined as the cycle at which a statistically significant increase in flourescence is detected. A lower Ct value is indicative of a higher mRNA concentration. The Ct value of a given gene (Ct_{marker}) is normalized by subtracting the Ct value of the 18S rRNA gene to obtain a $_{\Delta}Ct$ value using the following formula: $_{\Delta}Ct=Ct_{marker} - Ct_{\beta 18S\ rRNA}$. Expression is then calibrated against a no template control sample. The $_{\Delta}Ct$ value for the calibrator sample is then subtracted from $_{\Delta}Ct$ for each tissue sample according to the following formula: $_{\Delta\Delta}Ct=_{\Delta}Ct\text{-}_{sample} - _{\Delta}Ct\text{-}_{calibrator}$. Relative expression is then calculated using the arithmetic formula given by $2^{-\Delta\Delta Ct}$. Table 9 graphically represents the results of the TaqMan® expression study.

G. LightCycler

The LightCycler Instrument from Boehringer Mannheim GmbH, Mannheim is a thermocycler for the rapid analysis of PCR applications. Fluorimetric analysis of the PCR products formed is performed as "real time" measurement either continuously or at a specifically defined time during each PCR cycle. The three detection channels of the LightCycler are fitted with filter combinations which allow analysis at the given emission wavelengths, thereby enabling exact sample measurement to be carried out in parallel with the fluorophores. SYBR Green I is a dye specific for double-stranded DNA. Its inherent fluorescence is enhanced by binding to the minor groove to ds DNA. The addition of SYBR Green I to PCR reactions allows the detection of PCR products formed by the binding of this flurophore during each phase of DNA synthesis. The point of time of fluorimetric measurement is determined at the end of the elongation phase. The LightCycler- FastStart DNA Master SYBR Green I kit manufactured by Roche was used in order to quantify the copy number of a specific target. A panel of tumors and normal tissues were used to detect the expression levels of specific markers of the present invention in ovarian tumor samples compared to normal. The results are set forth in Table 11.

H. RT-PCR

The Gibco BRL Superscript first strand synthesis system was used for RT-PCR to synthesize first strand cDNA from total RNA of ovarian tumors as well as normal ovary. Gene specific primers were designed for clones of the present invention using software program Oligo5.1. Finished sequence for these clones was available by in house sequencing efforts. Following the use of this system, target cDNA was amplified with the gene specific primers. Presence of a band in a sample indicates that the gene is upregulated in that particular tissue or tumor. Table 11 summarizes the RT-PCR data.

VII. Summary of the Data Provided in the Tables

The level of expression of numerous potential markers (*i.e.* "the markers of the invention") in cells obtained from seven patients afflicted with ovarian cancer, and in cells of six ovarian cancer cell lines (*i.e.* a total of thirteen sample sources) were

compared with levels of expression of the same markers in non-cancerous ovarian cell samples. Markers for which significant differences in the levels of expression in cancer-related samples and non-cancerous samples were observed are listed in the Tables.

Tables 1 and 1A list markers that were identified in subtractive libraries and which are preferentially expressed in ovarian cancer cells over normal (*i.e.* non-cancerous) ovarian cells.

Table 2A lists markers, expression of which was increased by at least 5-fold in at least one of twenty-three ovarian cancer samples tested, relative to its expression in normal (*i.e.* non-cancerous) ovarian samples. Table 2B lists markers, expression of which was increased by at least 2-fold in all twenty-three ovarian cancer samples tested, relative to its expression in normal ovarian samples. Table 2C lists markers, expression of which was increased by at least 5-fold in at least 6 of the 23 ovarian cancer samples tested, relative to its expression in normal ovarian cells. Table 2D lists markers, expression of which was increased by at least 5-fold in at least 6 of the 23 ovarian cancer samples, relative to expression in normal ovarian samples, and which can serve as antigens for embodiments of the invention based upon proteomic studies, sequence analysis and/or literature references.

Table 3A lists markers, expression of which was decreased by at least 5-fold in at least one of twenty-three ovarian cancer samples tested, relative to its expression in normal (*i.e.* non-cancerous) ovarian cells. Table 3B lists markers, expression of which was decreased by at least 2-fold in all twenty-three ovarian cancer samples tested, relative to its expression in normal ovarian cells. Table 3C lists markers, expression of which was decreased by at least 5-fold in at least 6 of the 23 ovarian cancer samples tested, relative to its expression in normal (*i.e.* non-cancerous) ovarian cells.

Tables 4 and 5 list markers, expression of which was either increased (Table 4) or decreased (Table 5) in ovarian cancer samples, relative to expression in normal (*i.e.*, non-cancerous) ovarian samples. In particular, expression of the markers in 37 tumors (7 endometroid tumors, 5 clear cell tumors and 25 serous tumors) was evaluated. A ranking system based on the sum of the number of tumors multiplied by the fold regulation (for 2-fold, 3-fold, 5-fold and 10-fold regulation), divided by the total number of tumors, was employed. A rank score was generated for four categories, endometroid tumors, clear cell tumors, serous tumors and overall.

The markers of Table 4 had a score of greater than 1.5 for endometroid tumors, greater than 1.5 for clear cell tumors, greater than 1 for serous tumors, or greater than 0.8 overall. Table 4A shows the markers of Table 4 with a score of greater than 3 in any of the four categories.

The markers of Table 5 had a score of greater than 2.5 for endometroid tumors, greater than 2.5 for clear cell tumors, greater than 2 for serous tumors, or greater than 1.75 overall. Table 5A shows the markers of Table 5 with a score of greater than 3 in any of the four categories.

Tables 6 and 6A list markers that were identified in subtractive libraries and which are preferentially expressed in ovarian cancer cells over normal (i.e. non-cancerous ovarian cells).

Table 7A-7E show markers of the present invention obtained through proteomic analysis as described in Section VI., subsection C., above.

Table 8 lists the nucleotide sequences of 24 novel genes identified as described in Section VI., subsection D, above.

Table 9 depicts the results of the TaqMan® expression analysis obtained as described in Section VI., subsection F, above.

Tables 10A-10N contain Northern blot analysis data obtained as described in Section VI., subsection E, above.

Table 10A shows Marker 5 expression in normal human tissue samples. The highest level of expression is seen in placenta, followed by trachea, prostate, mammary gland, and lung, with lower levels in kidney, salivary gland, small intestine, and bladder, and an even lower level of expression in normal ovary tissue.

Table 10B shows that Marker 5 is expressed in several cancer cell lines. The highest level of expression is seen in SK-BR-3, followed by T-47D, BT-483, and ZR-75-30.

Table 10C shows Marker 8 expression in wide range of normal human tissue samples. The highest level of expression was seen in cerebllum, followed by placenta, prostate, and lung. Lower levels of expression were seen in kidney, spleen, testis, whole brain, and trachea, followed by mammary gland, small intestine, and thymus, which were higher than the level of expression in normal ovary tissue.

Table 10D shows that Marker 8 is expressed in all the cancer cell lines tested, with the highest levels of expression in DU4475, followed by MDA-MB-361line.

Table 10E shows Marker 10 expression was detected in all tissue samples tested. The highest level of expression was seen in trachea, followed by testis and prostate. Lower levels of expression were seen in whole brain, salivary gland, cerebellum, and small intesting. Expression in normal ovary tissue was among the lowest levels observed.

Table 10F shows that Marker 10 expression was detected in all cancer cell lines tested, with the highest levels of expression in MDA-MB-361, followed by MDA-MB-468, and HTB-78.

Table 10G shows a limited distribution of expression of Marker 15 in the panel of normal tissues tested, with significant expression only in placenta, and much lower levels of expression in whole brain, cerebellum, and prostate. No detectable levels of expression were seen in normal ovarian tissue.

Table 10H shows that Marker 15 expression was detected in all cancer cell lines tested, with the highest levels of expression seen in HTB-78, followed by MDA-MB-361, SK-BR-3, Caov-3, and MDA-MB-231.

Table 10I shows that expression of Marker 19 in the panel of normal human tissues tested was much higher in testis than in prostate and whole brain. Lower, but detectable, levels of expression were seen in a number of other tissues, with ovary among the lowest.

Table 10J shows that expression of Marker 19 was seen in 22 of the 26 cancer cell lines tested. The highest levels of expression were seen in BT549 and DU145, followed by NIH-Ovcar-3 and HTB-78. Lower levels of expression were seen in MDA-MB-453, MDA-MB-361, and T-470.

Table 10K shows that high levels of expression of Marker 25 in the panel of normal human tested were seen in placenta, prostate, and trachea, followed by kidney, lung, and small intestine. Lower levels of expression were seen in salivery gland, spleen, thymus, and bladder. Expression in normal ovarian tissue was just above background.

Table 10L shows that expression of Marker 25 was detected in 20 of the 26 cancer cell lines tested. The highest level of expression was seen in T-470, followed by S-BR-3. Lower levels of expression were seen in Caov-3, MDA-MB-468, and HTB-78, followed by MDA-MB-453, MDA-MB-361, BT-483, DU4475, and NIH-Ovcar-3.

Table 10M shows that the highest level of expression of Marker 039 was seen in whole brain, followed by cerebellum, with a lower level in prostate. Even lower levels were seen in a number of tissues, including kidney, liver, spleen, testis, thymus, trachea, and lung. Expression in normal ovarian tissue was among the lowest.

Table 10N shows that Marker 39 expression was detected in most of the cancer cell lines tested, with the highest level seen in SK-BR-3, followed by MDA-MB-361 and T470. Lower levels of expression were seen in all other cell lines tested, except for MDA-MB-157, Hs578Bst, Hs578T, and ES-2, in which no expression was detected.

Table 11 depicts the results of LightCycler data and RT-PCR data obtained as described in Section VI., subsections G. and H., respectively, above.

Tables 1-1, 2A-1, 2D-1, 3A-1, 4-1, 5-1 and 6-1 depict the accession number ("ACC Num") and database ("DATABASE") of the markers of the present invention with the corresponding GenBank GI number ("GI NBR"). One skilled in the art may thus obtain from the Tables of the invention, both GenBank accession number as well as the GenBank GI number for a marker of the present invention, thereby identifying the nucleotide and/or polypeptide sequence of that marker. For example, the markers of Tables 1 and 1A are referenced in Table 1-1 by both GenBank accession number and GenBank GI number.

Those skilled in the art will readily understand the data set forth in the Tables of the present invention. In particular, the following definitions will be understood to mean:

1) "ID #" or "#" is an arbitrary designation assigned to the marker.

2) "Image Clone ID" is the identification number assigned to the marker by the IMAGE Consortium (Lennon *et al.*, 1996, *Genomics* 33:151-152; see, *e.g.*, "http://www-bio.llnl.gov/bbrp/image/image.html" for further information). All referenced Image Clone sequences are expressly incorporated by reference.

3) "GenBank Accession Number" or "Accession No." or "acc" or "Accession #" or "Acc Num" is the identification number assigned to the marker in the relevant database

(see, *e.g.* "http://www.ncbi.nlm.nih.gov/genbank/ query_form.html" and "www.derwent.com" for further information). "GenBank Gi "" or "GI NB"" is the GI identification number assigned to the marker in the GenBank database (see *supra*). All referenced database sequences are expressly incorporated herein by reference.

4) "Secreted?" or "Secreted" indicates whether the protein corresponding to the marker has been demonstrated to be secreted in protein profiling experiments.

5) "Secretion Predicted?" indicates whether the protein corresponding to the marker is predicted, using the SIGNALP computer software described herein, to have at least one portion which is exposed to the extracellular medium upon expression of the protein.

6) "Ave-Normal-Exp" indicates the average marker expression in the non-cancerous samples.

7) "Max expression" and "Min-expression" indicates the highest (or lowest) marker expression value of all samples.

8) "Max fold up" and "Max fold-up down" indicates the highest fold positive (or negative) induction of regulation of the marker of all samples.

9) "Count-up tumors" and "Count-down tumors" indicate the total number of the twenty-three tumor samples that the marker was up (or down) regulated.

10) "Count-up cell lines" and "Count-down cell lines" indicated the total number of the six cell lines where the marker was up (or down) regulated.

11) "Chromosome" indicates the chromosome on which the genomic sequence corresponding to the marker is located, where this location is known.

12) "Location" indicates the location on the chromosome at which the genomic sequence corresponding to the marker is located, where this location is known. The genes were mapped using radiation hybrid panel data that can be found in the art, for example at "http://www.sanger.ac.uk/HGP/Rhmap/" and at "http://www.ncbi.nlm.nih.gov/genemap99/".

13) "Tissue Prominence" indicates up to three tissues in which expression of the marker is predicted, based on expression in the predicted tissues, of expressed sequence tags located in close proximity to the marker. The marker may also, or instead, be expressed in tissues that are not listed in this section (*i.e.* this list is not exhaustive).

14) "Database" or "dbase" refers to the relevant database where the nucleotide sequence may be found according to its accession number. These public databases include GenBank, dbEST (a division of GenBank), and NUCPATENT (a GENESEQ database, available through Derwent). For examples, see http://www.ncbi.nlm.nih.gov/Entrez/nucleotide.html for GenBank and www.derwent.com for GENESEQ. All referenced database sequences are expressly incorporated herein by reference.

The contents of all references, patents, published patent applications, and database records including, GenBank, IMAGE consortium and GENESEQ database records, cited throughout this application are hereby incorporated by reference.

Other Embodiments

Those skilled in the art will recognize, or be able to ascertain using no more than routine experimentation, many equivalents to the specific embodiments of the invention described herein. Such equivalents are intended to be encompassed by the following claims.

What is claimed is:

Claims

1. A method of assessing whether a patient is afflicted with ovarian cancer, the method comprising comparing:

a) the level of expression of a marker in a patient sample, wherein the marker is selected from the group consisting of the markers listed in Tables 1-11, and

b) the normal level of expression of the marker in a control non-ovarian cancer sample,

wherein a significant difference between the level of expression of the marker in the patient sample and the normal level is an indication that the patient is afflicted with ovarian cancer.

2. The method of claim 1, wherein the marker is selected from the group consisting of the markers listed in Table 2C.

3. The method of claim 1, wherein the marker is selected from the group consisting of the markers listed in Table 2D.

4. The method of claim 1, wherein the marker is selected from the group consisting of the markers listed in Table 3C.

5. The method of claim 1, wherein the marker is selected from the group consisting of the markers listed in Table 4A.

6. The method of claim 1, wherein the marker is selected from the group consisting of the markers listed in Table 5A.

7. The method of claim 1, wherein the marker is selected from the group consisting of the markers listed in Tables 6 and 6A.

8. The method of claim 1, wherein the marker is selected from the group consisting of the markers listed in Table 8.

9. The method of claim 1, wherein the marker is selected from the group consisting of the markers listed in Tables 7A-7E.

10. The method of claim 1, wherein the marker corresponds to a secreted protein.

11. The method of claim 10, wherein the marker is selected from the group consisting of the markers listed in Tables 7A-7E.

12. The method of claim 1, wherein the marker corresponds to a transcribed polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

13. The method of claim 1, wherein at least one tissue corresponding to the marker in the Tables is an epithelial tissue.

14. The method of claim 13, wherein at least one tissue corresponding to the marker in the Tables is an ovarian tissue.

15. The method of claim 1, wherein the marker is over- or under-expressed by at least two-fold in at least about 20% of ovarian cancer patients.

16. The method of claim 1, wherein the marker is not significantly expressed in non-ovarian tissues.

17. The method of claim 1, wherein the patient sample is an ovary-associated body fluid.

18. The method of claim 13, wherein the ovary-associated body fluid is selected from the group consisting of blood fluid, lymph, ascitic fluid, gynecological fluid, cystic fluid, urine, and a fluid collected by peritoneal rinsing.

19. The method of claim 1, wherein the sample comprises cells obtained from the patient.

20. The method of claim 19, wherein the cells are in a fluid selected from the group consisting of a fluid collected by peritoneal rinsing, a fluid collected by uterine rinsing, a uterine fluid, a uterine exudate, a pleural fluid, a cystic fluid, and an ovarian exudate.

21. The method of claim 1, wherein the level of expression of the marker in the sample is assessed by detecting the presence in the sample of a protein corresponding to the marker.

22. The method of claim 21, wherein the marker is selected from the group consisting of the markers listed in Tables 7A-7E and 8.

23. The method of claim 21, wherein the presence of the protein is detected using a reagent which specifically binds with the protein.

24. The method of claim 23, wherein the reagent is selected from the group consisting of an antibody, an antibody derivative, and an antibody fragment.

25. The method of claim 1, wherein the level of expression of the marker in the sample is assessed by detecting the presence in the sample of a transcribed polynucleotide or portion thereof, wherein the transcribed polynucleotide comprises the marker.

26. The method of claim 25, wherein the transcribed polynucleotide is an mRNA.

27. The method of claim 25, wherein the transcribed polynucleotide is a cDNA.

28. The method of claim 25, wherein the step of detecting further comprises amplifying the transcribed polynucleotide.

29. The method of claim 1, wherein the level of expression of the marker in the sample is assessed by detecting the presence in the sample of a transcribed polynucleotide which anneals with the marker or anneals with a portion of a polynucleotide wherein the polynucleotide comprises the marker, under stringent hybridization conditions.

30. The method of claim 1, wherein the level of expression of the marker in the sample differs from the normal level of expression of the marker in a patient not afflicted with ovarian cancer by a factor of at least about 2.

31. The method of claim 1, wherein the level of expression of the marker in the sample differs from the normal level of expression of the marker in a patient not afflicted with ovarian cancer by a factor of at least about 5.

32. The method of claim 1, comprising comparing:

a) the level of expression in the sample of each of a plurality of markers independently selected from the markers listed in Tables 1-11, and

b) the normal level of expression of each of the plurality of markers in samples of the same type obtained from control humans not afflicted with ovarian cancer,

wherein the level of expression of more than one of the markers is significantly altered, relative to the corresponding normal levels of expression of the markers, is an indication that the patient is afflicted with ovarian cancer.

33. The method of claim 32, wherein the plurality comprises at least three of the markers.

34. The method of claim 32, wherein the plurality comprises at least five of the markers.

35. A method of assessing whether a patient is afflicted with ovarian cancer, the method comprising comparing:

a) the level of expression of a marker in a sample obtained from the patient, wherein the marker is selected from the group consisting of the markers listed in Tables 1-11 and

b) the normal level of expression of the marker in samples of the same type obtained from control humans not afflicted with ovarian cancer,

wherein a significantly different level of expression of the marker in the sample, relative to the normal level, is an indication that the patient is afflicted with ovarian cancer.

36. A method for monitoring the progression of ovarian cancer in a patient, the method comprising:

a) detecting in a patient sample at a first point in time, the expression of a marker, wherein the marker is selected from the group consisting of the markers listed in Tables 1-11;

b) repeating step a) at a subsequent point in time; and

c) comparing the level of expression detected in steps a) and b), and therefrom monitoring the progression of ovarian cancer in the patient.

37. The method of claim 36, wherein the marker is selected from the group consisting of the markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8.

38. The method of claim 36, wherein the marker is selected from the group consisting of the markers listed in Tables 3A, 5, 7C and 7E.

39. The method of claim 36, wherein the marker corresponds to a secreted protein.

40. The method of claim 36, wherein marker corresponds to a transcribed polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

41. The method of claim 36, wherein the patient sample is an ovary-associated body fluid.

42. The method of claim 36, wherein the sample comprises cells obtained from the patient.

43. The method of claim 36, wherein between the first point in time and the subsequent point in time, the patient has undergone surgery to remove a tumor.

44. A method of assessing the efficacy of a test compound for inhibiting an ovarian cancer in a patient, the method comprising comparing:

a) expression of a marker in a first sample obtained from the patient and maintained in the presence of the test compound, wherein the marker is selected from the group consisting of the markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8, and

b) expression of the marker in a second sample obtained from the patient and maintained in the absence of the test compound,

wherein a significantly lower level of expression of the marker in the first sample, relative to the second sample, is an indication that the test compound is efficacious for inhibiting ovarian cancer in the patient.

45. The method of claim 44, wherein the first and second samples are portions of a single sample obtained from the patient.

46. The method of claim 44, wherein the first and second samples are portions of pooled samples obtained from the patient.

47. A method of assessing the efficacy of a test compound for inhibiting ovarian cancer in a patient, the method comprising comparing:

a) expression of a marker in a first sample obtained from the patient and maintained in the presence of the test compound, wherein the marker is selected from the group consisting of the markers listed in Tables 3A, 5, 7C and 7E, and

b) expression of the marker in a second sample obtained from the patient and maintained in the absence of the test compound,

wherein a significantly enhanced level of expression of the marker in the first sample, relative to the second sample, is an indication that the test compound is efficacious for inhibiting ovarian cancer in the patient.

48. A method of assessing the efficacy of a therapy for inhibiting ovarian cancer in a patient, the method comprising comparing:

a) expression of a marker in the first sample obtained from the patient prior to providing at least a portion of the therapy to the patient, wherein the marker is selected from the group consisting of the markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8, and

b) expression of the marker in a second sample obtained from the patient following provision of the portion of the therapy,

wherein a significantly lower level of expression of the marker in the second sample, relative to the first sample, is an indication that the therapy is efficacious for inhibiting ovarian cancer in the patient.

49. A method of assessing the efficacy of a therapy for inhibiting ovarian cancer in a patient, the method comprising comparing:

a) expression of a marker in the first sample obtained from the patient prior to providing at least a portion of the therapy to the patient, wherein the marker is selected from the group consisting of the markers listed in Tables 3A, 5, 7C and 7E, and

b) expression of the marker in a second sample obtained from the patient following provision of the portion of the therapy,

wherein a significantly enhanced level of expression of the marker in the second sample, relative to the first sample, is an indication that the therapy is efficacious for inhibiting ovarian cancer in the patient.

50. A method of selecting a composition for inhibiting ovarian cancer in a patient, the method comprising:

a) obtaining a sample comprising cancer cells from the patient;

b) separately maintaining aliquots of the sample in the presence of a plurality of test compositions;

c) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8; and

d) selecting one of the test compositions which induces a lower level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

51. A method of selecting a composition for inhibiting ovarian cancer in a patient, the method comprising:

a) obtaining a sample comprising cancer cells from the patient;

b) separately maintaining aliquots of the sample in the presence of a plurality of test compositions;

c) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 3A, 5, 7C and 7E; and

d) selecting one of the test compositions which induces an enhanced level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

52. A method of inhibiting ovarian cancer in a patient, the method comprising:

a) obtaining a sample comprising cancer cells from the patient;

b) separately maintaining aliquots of the sample in the presence of a plurality of test compositions;

c) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8, and

d) administering to the patient at least one of the test compositions which induces a lower level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

53. A method of selecting a composition for inhibiting ovarian cancer in a patient, the method comprising:

a) obtaining a sample comprising cancer cells from the patient;

b) separately maintaining aliquots of the sample in the presence of a plurality of test compositions;

c) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 3A, 5, 7C and 7E, and

d) administering to the patient at least one of the test compositions which induces an enhanced level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

54. A kit for assessing the suitability of each of a plurality of compounds for inhibiting ovarian cancer in a patient, the kit comprising:

a) the plurality of compounds; and

b) a reagent for assessing expression of a marker selected from the group consisting of the markers listed in Tables 1-11.

55. A kit for assessing whether a patient is afflicted with ovarian cancer, the kit comprising reagents for assessing expression of a marker selected from the group consisting of the markers listed in Tables 1-11.

56. A method of making an isolated hybridoma which produces an antibody useful for assessing whether a patient is afflicted with ovarian cancer, the method comprising:

isolating a protein corresponding to a marker selected from the group consisting of the markers listed in Tables 1-11;

immunizing a mammal using the isolated protein;

isolating splenocytes from the immunized mammal;

fusing the isolated splenocytes with an immortalized cell line to form hybridomas; and

screening individual hybridomas for production of an antibody which specifically binds with the protein to isolate the hybridoma.

57. The method of claim 56, wherein the marker is selected from the group consisting of the members listed in Tables 7A-7E and 8.

58. An antibody produced by a hybridoma made by the method of claim 56.

59. A kit for assessing the presence of human ovarian cancer cells, the kit comprising an antibody, wherein the antibody specifically binds with a protein corresponding to a marker selected from the group consisting of the markers listed in Tables 1-11.

60. A kit for assessing the presence of ovarian cancer cells, the kit comprising a nucleic acid probe wherein the probe specifically binds with a transcribed polynucleotide corresponding to a marker selected from the group consisting of the markers listed in Tables 1-11.

61. A method of assessing the ovarian cell carcinogenic potential of a test compound, the method comprising:

a) maintaining separate aliquots of ovarian cells in the presence and absence of the test compound; and

b) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8, and

wherein a significantly enhanced level of expression of the marker in the aliquot maintained in the presence of the test compound, relative to the aliquot maintained in the absence of the test compound, is an indication that the test compound possesses human ovarian cell carcinogenic potential.

62. A method of assessing the ovarian cell carcinogenic potential of a test compound, the method comprising:

a) maintaining separate aliquots of ovarian cells in the presence and absence of the test compound; and

b) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8, and

wherein a significantly lower level of expression of the marker in the aliquot maintained in the presence of the test compound, relative to the aliquot maintained in the absence of the test compound, is an indication that the test compound possesses ovarian cell carcinogenic potential.

63. A kit for assessing the ovarian cell carcinogenic potential of a test compound, the kit comprising ovarian cells and a reagent for assessing expression of a marker, wherein the marker is selected from the group consisting of the markers listed in Tables 1-11.

64. A method of treating a patient afflicted with ovarian cancer, the method comprising providing to cells of the cancer a protein corresponding to a marker selected from the markers listed in Tables 3A, 5, 7C and 7E.

65. The method of claim 62, wherein the protein is provided to the cells by providing a vector comprising a polynucleotide encoding the protein to the cells.

66. A method of treating a patient afflicted with ovarian cancer, the method comprising providing to cells of the patient an antisense oligonucleotide complementary to a polynucleotide corresponding to a marker selected from the markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8.

67. A method of inhibiting ovarian cancer in a patient at risk for developing ovarian cancer, the method comprising inhibiting expression of a gene corresponding to a marker selected from the markers listed in Tables 1, 1A, 2A, 4, 6, 6A, 7A, 7B, 7D and 8.

68. A method of inhibiting ovarian cancer in a patient at risk for developing ovarian cancer, the method comprising enhancing expression of a gene corresponding to a marker selected from the markers listed in Tables 3A, 5, 7C and 7E.

69. An isolated nucleic acid molecule selected from the group consisting of:

a) a nucleic acid molecule comprising a nucleotide sequence which is at least 90% homologous to a nucleotide sequence of Table 8, or a complement thereof;

b) a nucleic acid molecule comprising a fragment of a nucleic acid molecule comprising the nucleotide sequence of Table 8, or a complement thereof; and

c) a nucleic acid molecule comprising the nucleotide sequence of Table 8, or a complement thereof.

70. A vector which contains a nucleic acid molecule of claim 69.

71. A host cell which contains a nucleic acid molecule of claim 69.

72. An isolated polypeptide which is encoded by a nucleic acid molecule comprising a nucleotide sequence which is at least 90% homologous to a nucleic acid comprising the nucleotide sequence of Table 8.

73. An antibody which selectively binds to a polypeptide of claim 72.

Table 1

Patent Sequence Number	Accession Number
Sequence 1	AA001066
Sequence 2	AA007157
Sequence 3	AA010954
Sequence 4	AA015792
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Sequence 9	AA024405
Sequence 10	AA029750
Sequence 11	AA031509
Sequence 12	AA033876
Sequence 13	AA034237
Sequence 14	AA039967
Sequence 15	AA040073
Sequence 16	AA040122
Sequence 17	AA045732
Sequence 18	AA045861
Sequence 19	AA046835
Sequence 20	AA047026
Sequence 21	AA047417
Sequence 22	AA053486
Sequence 23	AA054658
Sequence 24	AA055606
Sequence 25	AA056113
Sequence 26	AA056176
Sequence 27	AA056363
Sequence 28	AA056431
Sequence 29	AA065336
Sequence 30	AA069781
Sequence 31	AA069784
Sequence 32	AA069839
Sequence 33	AA069983
Sequence 34	AA071255
Sequence 35	AA075135
Sequence 36	AA081655
Sequence 37	AA082245
Sequence 38	AA083471
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Sequence 40	AA085862
Sequence 41	AA085872
Sequence 42	AA085947
Sequence 43	AA088770
Sequence 44	AA100333
Sequence 45	AA100719
Sequence 46	AA100793
Sequence 47	AA100852
Sequence 48	AA101270
Sequence 49	AA101561
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Sequence 51	AA112043
Sequence 52	AA112308
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Sequence 73	AA131160
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Sequence 101	AA157788

Table 1

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Sequence 117	AA179462
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Sequence 119	AA187958
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Table 1

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Sequence 241	AA494493
Sequence 242	AA496518
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Table 1

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Table 1

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Table 1

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Sequence 621	M29540

Table 1

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Table 1

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Sequence 734	X04470	Sequence 786	AA046853
Sequence 735	X05908	Sequence 787	AA047052
Sequence 736	X07819	Sequence 788	AA047213
Sequence 737	X13238	Sequence 789	AA057071
Sequence 738	X15674	Sequence 790	AA058933
Sequence 739	X15729	Sequence 791	AA064952
Sequence 740	X16354	Sequence 792	AA075089
Sequence 741	X16356	Sequence 793	AA076291
Sequence 742	X16455	Sequence 794	AA078508
Sequence 743	X17025	Sequence 795	AA080864
Sequence 744	X20432	Sequence 796	AA083345
Sequence 745	X30167	Sequence 797	AA083693
Sequence 746	X33937	Sequence 798	AA085497
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Sequence 748	X41105	Sequence 800	AA093935
Sequence 749	X51841	Sequence 801	AA100291
Sequence 750	X54941	Sequence 802	AA101207
Sequence 751	X56932	Sequence 803	AA102403
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Sequence 753	X59710	Sequence 805	AA115174
Sequence 754	X65614	Sequence 806	AA122134
Sequence 755	X67951	Sequence 807	AA122291
Sequence 756	X68060	Sequence 808	AA125780
Sequence 757	X68277	Sequence 809	AA127322
Sequence 758	X72790	Sequence 810	AA130432
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Sequence 760	X83544	Sequence 812	AA132445
Sequence 761	X85134	Sequence 813	AA134109
Sequence 762	X87949	Sequence 814	AA135924
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Sequence 764	X99699	Sequence 816	AA143034
Sequence 765	X99920	Sequence 817	AA150057
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Sequence 767	Y13323	Sequence 819	AA156335
Sequence 768	Y17392	Sequence 820	AA157333
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Sequence 770	Z36815	Sequence 822	AA165439
Sequence 771	Z47087	Sequence 823	AA165632
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Sequence 775	AA018843	Sequence 827	AA178870
Sequence 776	AA021647	Sequence 828	AA181874
Sequence 777	AA022842	Sequence 829	AA195194

Table 1

Sequence 830	AA203206
Sequence 831	AA203289
Sequence 832	AA204768
Sequence 833	AA206621
Sequence 834	AA213914
Sequence 835	AA218919
Sequence 836	AA224050
Sequence 837	AA224244
Sequence 838	AA227596
Sequence 839	AA229018
Sequence 840	AA229161
Sequence 841	AA236445
Sequence 842	AA236680
Sequence 843	AA243537
Sequence 844	AA252436
Sequence 845	AA252869
Sequence 846	AA256330
Sequence 847	AA262700
Sequence 848	AA278358
Sequence 849	AA287076
Sequence 850	AA291551
Sequence 851	AA293273
Sequence 852	AA295982
Sequence 853	AA301675
Sequence 854	AA301722
Sequence 855	AA302964
Sequence 856	AA303199
Sequence 857	AA304927
Sequence 858	AA305042
Sequence 859	AA305635
Sequence 860	AA315030
Sequence 861	AA315943
Sequence 862	AA317144
Sequence 863	AA326060
Sequence 864	AA327358
Sequence 865	AA336387
Sequence 866	AA346413
Sequence 867	AA352580
Sequence 868	AA363162
Sequence 869	AA375754
Sequence 870	AA399230
Sequence 871	AA400249
Sequence 872	AA401629
Sequence 873	AA402885
Sequence 874	AA406401
Sequence 875	AA421682
Sequence 876	AA422057
Sequence 877	AA424445
Sequence 878	AA424901
Sequence 879	AA424984
Sequence 880	AA425182
Sequence 881	AA428607
Sequence 882	AA446099
Sequence 883	AA446403
Sequence 884	AA447735
Sequence 885	AA449054
Sequence 886	AA449205
Sequence 887	AA449520
Sequence 888	AA452273
Sequence 889	AA455007
Sequence 890	AA455104
Sequence 891	AA459527
Sequence 892	AA460226
Sequence 893	AA461287
Sequence 894	AA464526
Sequence 895	AA468398
Sequence 896	AA469135
Sequence 897	AA469453
Sequence 898	AA470690
Sequence 899	AA479427
Sequence 900	AA480336
Sequence 901	AA483454
Sequence 902	AA487669
Sequence 903	AA488423
Sequence 904	AA488635
Sequence 905	AA488843
Sequence 906	AA489772
Sequence 907	AA503972
Sequence 908	AA508506
Sequence 909	AA513550
Sequence 910	AA513783
Sequence 911	AA514989
Sequence 912	AA516400
Sequence 913	AA520993
Sequence 914	AA521110
Sequence 915	AA523639
Sequence 916	AA523697
Sequence 917	AA528106
Sequence 918	AA528190
Sequence 919	AA528226
Sequence 920	AA534830
Sequence 921	AA548722
Sequence 922	AA551236
Sequence 923	AA551243
Sequence 924	AA558778
Sequence 925	AA563834
Sequence 926	AA576432
Sequence 927	AA580069
Sequence 928	AA580294
Sequence 929	AA582588
Sequence 930	AA584304
Sequence 931	AA588772
Sequence 932	AA593075
Sequence 933	AA595585

Table 1

Sequence 934	AA601895
Sequence 935	AA628700
Sequence 936	AA630326
Sequence 937	AA630642
Sequence 938	AA631178
Sequence 939	AA631218
Sequence 940	AA633550
Sequence 941	AA634808
Sequence 942	AA639199
Sequence 943	AA639791
Sequence 944	AA644273
Sequence 945	AA648897
Sequence 946	AA664732
Sequence 947	AA677550
Sequence 948	AA687308
Sequence 949	AA705002
Sequence 950	AA706685
Sequence 951	AA708266
Sequence 952	AA713687
Sequence 953	AA719618
Sequence 954	AA719674
Sequence 955	AA720572
Sequence 956	AA721752
Sequence 957	AA723612
Sequence 958	AA730571
Sequence 959	AA742282
Sequence 960	AA748437
Sequence 961	AA749187
Sequence 962	AA761602
Sequence 963	AA768355
Sequence 964	AA769127
Sequence 965	AA774030
Sequence 966	AA774247
Sequence 967	AA779631
Sequence 968	AA808747
Sequence 969	AA809854
Sequence 970	AA810859
Sequence 971	AA825673
Sequence 972	AA825768
Sequence 973	AA826517
Sequence 974	AA827331
Sequence 975	AA827764
Sequence 976	AA829511
Sequence 977	AA831603
Sequence 978	AA836991
Sequence 979	AA837254
Sequence 980	AA846480
Sequence 981	AA846840
Sequence 982	AA853515
Sequence 983	AA883212
Sequence 984	AA886885
Sequence 985	AA889485
Sequence 986	AA897461
Sequence 987	AA902582
Sequence 988	AA902644
Sequence 989	AA909144
Sequence 990	AA913281
Sequence 991	AA916756
Sequence 992	AA922420
Sequence 993	AA927283
Sequence 994	AA933075
Sequence 995	AA935979
Sequence 996	AA937947
Sequence 997	AA948295
Sequence 998	AA969131
Sequence 999	AA971881
Sequence 1000	AA973019
Sequence 1001	AA988923
Sequence 1002	AA989465
Sequence 1003	AA994023
Sequence 1004	AB002310
Sequence 1005	AB002330
Sequence 1006	AB007944
Sequence 1007	AB012911
Sequence 1008	AB017019
Sequence 1009	AB018266
Sequence 1010	AB018305
Sequence 1011	AB018347
Sequence 1012	AB019568
Sequence 1013	AB023158
Sequence 1014	AB028976
Sequence 1015	AB029005
Sequence 1016	AC28164
Sequence 1017	AD001528
Sequence 1018	AF000231
Sequence 1019	AF006088
Sequence 1020	AF006516
Sequence 1021	AF012072
Sequence 1022	AF026947
Sequence 1023	AF028832
Sequence 1024	AF030424
Sequence 1025	AF031379
Sequence 1026	AF035287
Sequence 1027	AF035309
Sequence 1028	AF038197
Sequence 1029	AF038404
Sequence 1030	AF043431
Sequence 1031	AF044670
Sequence 1032	AF044958
Sequence 1033	AF047184
Sequence 1034	AF052164
Sequence 1035	AF052496
Sequence 1036	AF052578
Sequence 1037	AF054990

Table 1

Sequence 1038	AF059524
Sequence 1039	AF070561
Sequence 1040	AF070626
Sequence 1041	AF070655
Sequence 1042	AF070674
Sequence 1043	AF075040
Sequence 1044	AF077030
Sequence 1045	AF078847
Sequence 1046	AF080246
Sequence 1047	AF081282
Sequence 1048	AF081484
Sequence 1049	AF084523
Sequence 1050	AF086163
Sequence 1051	AF095791
Sequence 1052	AF100756
Sequence 1053	AF107406
Sequence 1054	AF119297
Sequence 1055	AF131858
Sequence 1056	AF132940
Sequence 1057	AF151857
Sequence 1058	AI028733
Sequence 1059	AI031901
Sequence 1060	AI033739
Sequence 1061	AI040324
Sequence 1062	AI051172
Sequence 1063	AI076805
Sequence 1064	AI087005
Sequence 1065	AI089913
Sequence 1066	AI092007
Sequence 1067	AI127326
Sequence 1068	AI147251
Sequence 1069	AI148933
Sequence 1070	AI149846
Sequence 1071	AI167855
Sequence 1072	AI183965
Sequence 1073	AI189258
Sequence 1074	AI220148
Sequence 1075	AI224374
Sequence 1076	AI240095
Sequence 1077	AI246677
Sequence 1078	AI248538
Sequence 1079	AI266582
Sequence 1080	AI268864
Sequence 1081	AI270183
Sequence 1082	AI271795
Sequence 1083	AI273008
Sequence 1084	AI273841
Sequence 1085	AI274756
Sequence 1086	AI275528
Sequence 1087	AI283096
Sequence 1088	AI298059
Sequence 1089	AI335653
Sequence 1090	AI338977
Sequence 1091	AI339946
Sequence 1092	AI373032
Sequence 1093	AI374954
Sequence 1094	AI380539
Sequence 1095	AI417583
Sequence 1096	AI432644
Sequence 1097	AI433157
Sequence 1098	AI457792
Sequence 1099	AI469112
Sequence 1100	AI471114
Sequence 1101	AI471534
Sequence 1102	AI473927
Sequence 1103	AI479305
Sequence 1104	AI499243
Sequence 1105	AI525796
Sequence 1106	AI525843
Sequence 1107	AI537677
Sequence 1108	AI541029
Sequence 1109	AI560129
Sequence 1110	AI583108
Sequence 1111	AI584068
Sequence 1112	AI587208
Sequence 1113	AI589867
Sequence 1114	AI610676
Sequence 1115	AI630362
Sequence 1116	AI633006
Sequence 1117	AI634443
Sequence 1118	AI635096
Sequence 1119	AI682105
Sequence 1120	AI683338
Sequence 1121	AI684800
Sequence 1122	AI684991
Sequence 1123	AI689369
Sequence 1124	AI689617
Sequence 1125	AI689883
Sequence 1126	AI693745
Sequence 1127	AI701001
Sequence 1128	AI733038
Sequence 1129	AI735638
Sequence 1130	AI741506
Sequence 1131	AI742722
Sequence 1132	AI742738
Sequence 1133	AI743552
Sequence 1134	AI753784
Sequence 1135	AI754296
Sequence 1136	AI754652
Sequence 1137	AI754732
Sequence 1138	AI765975
Sequence 1139	AI769970
Sequence 1140	AI819225
Sequence 1141	AI820563

Table 1

Sequence 1142	AI827818
Sequence 1143	AI828682
Sequence 1144	AI830067
Sequence 1145	AI861989
Sequence 1146	AI887129
Sequence 1147	AI887632
Sequence 1148	AI890281
Sequence 1149	AI924046
Sequence 1150	AI924096
Sequence 1151	AI924823
Sequence 1152	AI963471
Sequence 1153	AI963604
Sequence 1154	AI972556
Sequence 1155	AI979048
Sequence 1156	AI984656
Sequence 1157	AJ010442
Sequence 1158	AJ132694
Sequence 1159	AJ224442
Sequence 1160	AL036299
Sequence 1161	AL042979
Sequence 1162	AL047305
Sequence 1163	AL049247
Sequence 1164	AL049313
Sequence 1165	AL049381
Sequence 1166	AL049932
Sequence 1167	AL050041
Sequence 1168	AL050161
Sequence 1169	AL050265
Sequence 1170	AL050268
Sequence 1171	AL050367
Sequence 1172	AL079286
Sequence 1173	AL079312
Sequence 1174	AL079314
Sequence 1175	AL080113
Sequence 1176	AL110164
Sequence 1177	AL117412
Sequence 1178	AL117612
Sequence 1179	AL119009
Sequence 1180	AW014693
Sequence 1181	AW014985
Sequence 1182	AW021794
Sequence 1183	C01521
Sequence 1184	D01096
Sequence 1185	D13119
Sequence 1186	D13627
Sequence 1187	D13630
Sequence 1188	D13639
Sequence 1189	D13665
Sequence 1190	D14530
Sequence 1191	D21260
Sequence 1192	D25278
Sequence 1193	D26361
Sequence 1194	D30655
Sequence 1195	D50310
Sequence 1196	D51497
Sequence 1197	D53031
Sequence 1198	D62116
Sequence 1199	D63878
Sequence 1200	D78611
Sequence 1201	D82348
Sequence 1202	D83032
Sequence 1203	D85433
Sequence 1204	D87437
Sequence 1205	D87667
Sequence 1206	D89092
Sequence 1207	D90041
Sequence 1208	E02628
Sequence 1209	E05732
Sequence 1210	F00551
Sequence 1211	H08920
Sequence 1212	H25080
Sequence 1213	H30306
Sequence 1214	H44647
Sequence 1215	H81376
Sequence 1216	H93521
Sequence 1217	H94496
Sequence 1218	J03464
Sequence 1219	J03799
Sequence 1220	J04027
Sequence 1221	J04177
Sequence 1222	K01228
Sequence 1223	K01566
Sequence 1224	L07395
Sequence 1225	L09159
Sequence 1226	L11315
Sequence 1227	L13806
Sequence 1228	L15702
Sequence 1229	L16510
Sequence 1230	L24804
Sequence 1231	L25931
Sequence 1232	L28809
Sequence 1233	M10036
Sequence 1234	M10905
Sequence 1235	M11353
Sequence 1236	M12267
Sequence 1237	M13536
Sequence 1238	M14483
Sequence 1239	M14630
Sequence 1240	M17885
Sequence 1241	M18366
Sequence 1242	M21575
Sequence 1243	M23254
Sequence 1244	M24194
Sequence 1245	M24486

Table 1

Sequence 1246	M26512
Sequence 1247	M28372
Sequence 1248	M31159
Sequence 1249	M32220
Sequence 1250	M36341
Sequence 1251	M36693
Sequence 1252	M38690
Sequence 1253	M58485
Sequence 1254	M59849
Sequence 1255	M62831
Sequence 1256	M64241
Sequence 1257	M69043
Sequence 1258	M77142
Sequence 1259	M77830
Sequence 1260	M86667
Sequence 1261	M88108
Sequence 1262	M93651
Sequence 1263	M95542
Sequence 1264	N43970
Sequence 1265	Q12759
Sequence 1266	Q14635
Sequence 1267	R11045
Sequence 1268	R76376
Sequence 1269	R84450
Sequence 1270	S74728
Sequence 1271	S82081
Sequence 1272	T07459
Sequence 1273	T19883
Sequence 1274	T21168
Sequence 1275	T22605
Sequence 1276	T37405
Sequence 1277	T67129
Sequence 1278	T69703
Sequence 1279	T78615
Sequence 1280	T89937
Sequence 1281	U03851
Sequence 1282	U12404
Sequence 1283	U14967
Sequence 1284	U14971
Sequence 1285	U20659
Sequence 1286	U25789
Sequence 1287	U30825
Sequence 1288	U47077
Sequence 1289	U49844
Sequence 1290	U63846
Sequence 1291	U65928
Sequence 1292	U72516
Sequence 1293	U79282
Sequence 1294	U90716
Sequence 1295	U90904
Sequence 1296	U94364
Sequence 1297	V20437
Sequence 1298	V24305
Sequence 1299	V81394
Sequence 1300	V84510
Sequence 1301	W19427
Sequence 1302	W65357
Sequence 1303	W75963
Sequence 1304	W80525
Sequence 1305	X01630
Sequence 1306	X04098
Sequence 1307	X04408
Sequence 1308	X06700
Sequence 1309	X14420
Sequence 1310	X51742
Sequence 1311	X60111
Sequence 1312	X69398
Sequence 1313	X72755
Sequence 1314	X74979
Sequence 1315	X76180
Sequence 1316	X78627
Sequence 1317	X79067
Sequence 1318	X80910
Sequence 1319	X87949
Sequence 1320	Y00052
Sequence 1321	Y00062
Sequence 1322	Y00282
Sequence 1323	Y00503
Sequence 1324	Y15286
Sequence 1325	Y17171
Sequence 1326	Z13009
Sequence 1327	Z24724
Sequence 1328	Z29083
Sequence 1329	Z29331
Sequence 1330	Z46606
Sequence 1331	Z48501
Sequence 1332	AA001460
Sequence 1333	AA001543
Sequence 1334	AA001792
Sequence 1335	AA004925
Sequence 1336	AA010897
Sequence 1337	AA017162
Sequence 1338	AA019019
Sequence 1339	AA022980
Sequence 1340	AA024595
Sequence 1341	AA024940
Sequence 1342	AA024996
Sequence 1343	AA025750
Sequence 1344	AA026598
Sequence 1345	AA029271
Sequence 1346	AA029725
Sequence 1347	AA029930
Sequence 1348	AA033832
Sequence 1349	AA035471

Table 1

Sequence 1350	AA035616
Sequence 1351	AA036752
Sequence 1352	AA037377
Sequence 1353	AA039778
Sequence 1354	AA039948
Sequence 1355	AA040688
Sequence 1356	AA040820
Sequence 1357	AA041259
Sequence 1358	AA043477
Sequence 1359	AA044209
Sequence 1360	AA044233
Sequence 1361	AA044791
Sequence 1362	AA045054
Sequence 1363	AA045147
Sequence 1364	AA045768
Sequence 1365	AA046848
Sequence 1366	AA053021
Sequence 1367	AA053316
Sequence 1368	AA053919
Sequence 1369	AA054069
Sequence 1370	AA055479
Sequence 1371	AA055591
Sequence 1372	AA055637
Sequence 1373	AA057243
Sequence 1374	AA058712
Sequence 1375	AA059128
Sequence 1376	AA065169
Sequence 1377	AA069850
Sequence 1378	AA071167
Sequence 1379	AA075158
Sequence 1380	AA075515
Sequence 1381	AA075663
Sequence 1382	AA076397
Sequence 1383	AA076421
Sequence 1384	AA078387
Sequence 1385	AA078570
Sequence 1386	AA078872
Sequence 1387	AA079480
Sequence 1388	AA080889
Sequence 1389	AA081073
Sequence 1390	AA081608
Sequence 1391	AA081834
Sequence 1392	AA081917
Sequence 1393	AA082258
Sequence 1394	AA082441
Sequence 1395	AA083270
Sequence 1396	AA083345
Sequence 1397	AA083522
Sequence 1398	AA083573
Sequence 1399	AA083638
Sequence 1400	AA083774
Sequence 1401	AA088318
Sequence 1402	AA088344
Sequence 1403	AA088351
Sequence 1404	AA088693
Sequence 1405	AA088783
Sequence 1406	AA088829
Sequence 1407	AA090106
Sequence 1408	AA096032
Sequence 1409	AA099819
Sequence 1410	AA099923
Sequence 1411	AA099976
Sequence 1412	AA100764
Sequence 1413	AA101010
Sequence 1414	AA102013
Sequence 1415	AA102564
Sequence 1416	AA102830
Sequence 1417	AA112186
Sequence 1418	AA112645
Sequence 1419	AA113305
Sequence 1420	AA115218
Sequence 1421	AA115315
Sequence 1422	AA121656
Sequence 1423	AA121718
Sequence 1424	AA125809
Sequence 1425	AA125939
Sequence 1426	AA126452
Sequence 1427	AA126718
Sequence 1428	AA127436
Sequence 1429	AA127666
Sequence 1430	AA128063
Sequence 1431	AA128636
Sequence 1432	AA128641
Sequence 1433	AA130778
Sequence 1434	AA130982
Sequence 1435	AA131827
Sequence 1436	AA132056
Sequence 1437	AA132163
Sequence 1438	AA132574
Sequence 1439	AA132992
Sequence 1440	AA133351
Sequence 1441	AA133474
Sequence 1442	AA134460
Sequence 1443	AA134527
Sequence 1444	AA134589
Sequence 1445	AA135696
Sequence 1446	AA137017
Sequence 1447	AA142941
Sequence 1448	AA143001
Sequence 1449	AA143074
Sequence 1450	AA143746
Sequence 1451	AA146900
Sequence 1452	AA147200
Sequence 1453	AA147247

Table 1

Sequence 1454	AA147781
Sequence 1455	AA148027
Sequence 1456	AA148136
Sequence 1457	AA149810
Sequence 1458	AA150377
Sequence 1459	AA150837
Sequence 1460	AA150928
Sequence 1461	AA151274
Sequence 1462	AA151594
Sequence 1463	AA151755
Sequence 1464	AA152476
Sequence 1465	AA155754
Sequence 1466	AA156066
Sequence 1467	AA157163
Sequence 1468	AA157993
Sequence 1469	AA158738
Sequence 1470	AA159110
Sequence 1471	AA159576
Sequence 1472	AA161003
Sequence 1473	AA161076
Sequence 1474	AA161467
Sequence 1475	AA164193
Sequence 1476	AA164473
Sequence 1477	AA164729
Sequence 1478	AA164873
Sequence 1479	AA165027
Sequence 1480	AA165068
Sequence 1481	AA165087
Sequence 1482	AA165174
Sequence 1483	AA165282
Sequence 1484	AA165293
Sequence 1485	AA165638
Sequence 1486	AA166618
Sequence 1487	AA167041
Sequence 1488	AA167750
Sequence 1489	AA171630
Sequence 1490	AA173506
Sequence 1491	AA174097
Sequence 1492	AA179187
Sequence 1493	AA180137
Sequence 1494	AA180224
Sequence 1495	AA180383
Sequence 1496	AA181075
Sequence 1497	AA181258
Sequence 1498	AA181684
Sequence 1499	AA182415
Sequence 1500	AA182540
Sequence 1501	AA186577
Sequence 1502	AA187817
Sequence 1503	AA188045
Sequence 1504	AA188140
Sequence 1505	AA188384
Sequence 1506	AA188826
Sequence 1507	AA190873
Sequence 1508	AA191422
Sequence 1509	AA192094
Sequence 1510	AA193308
Sequence 1511	AA194577
Sequence 1512	AA195246
Sequence 1513	AA195865
Sequence 1514	AA196424
Sequence 1515	AA196982
Sequence 1516	AA203691
Sequence 1517	AA204867
Sequence 1518	AA206578
Sequence 1519	AA206991
Sequence 1520	AA209508
Sequence 1521	AA216753
Sequence 1522	AA219665
Sequence 1523	AA223121
Sequence 1524	AA223820
Sequence 1525	AA224109
Sequence 1526	AA224407
Sequence 1527	AA227118
Sequence 1528	AA229325
Sequence 1529	AA229611
Sequence 1530	AA232959
Sequence 1531	AA233835
Sequence 1532	AA233843
Sequence 1533	AA234092
Sequence 1534	AA234307
Sequence 1535	AA236776
Sequence 1536	AA242985
Sequence 1537	AA243338
Sequence 1538	AA244342
Sequence 1539	AA249154
Sequence 1540	AA255502
Sequence 1541	AA256591
Sequence 1542	AA261990
Sequence 1543	AA262939
Sequence 1544	AA278445
Sequence 1545	AA278482
Sequence 1546	AA278642
Sequence 1547	AA278956
Sequence 1548	AA279048
Sequence 1549	AA280099
Sequence 1550	AA280221
Sequence 1551	AA280828
Sequence 1552	AA282915
Sequence 1553	AA284334
Sequence 1554	AA284555
Sequence 1555	AA284670
Sequence 1556	AA284671
Sequence 1557	AA284870

Table 1

Sequence 1558	AA284906
Sequence 1559	AA285290
Sequence 1560	AA286699
Sequence 1561	AA286872
Sequence 1562	AA287219
Sequence 1563	AA287642
Sequence 1564	AA287815
Sequence 1565	AA291438
Sequence 1566	AA291485
Sequence 1567	AA291971
Sequence 1568	AA292334
Sequence 1569	AA293127
Sequence 1570	AA293133
Sequence 1571	AA293273
Sequence 1572	AA293286
Sequence 1573	AA293353
Sequence 1574	AA293572
Sequence 1575	AA293629
Sequence 1576	AA293759
Sequence 1577	AA293804
Sequence 1578	AA296780
Sequence 1579	AA297402
Sequence 1580	AA298505
Sequence 1581	AA299640
Sequence 1582	AA301062
Sequence 1583	AA301800
Sequence 1584	AA303461
Sequence 1585	AA303568
Sequence 1586	AA306718
Sequence 1587	AA306862
Sequence 1588	AA306876
Sequence 1589	AA307198
Sequence 1590	AA307325
Sequence 1591	AA308065
Sequence 1592	AA308274
Sequence 1593	AA308744
Sequence 1594	AA310739
Sequence 1595	AA310771
Sequence 1596	AA311228
Sequence 1597	AA311460
Sequence 1598	AA311571
Sequence 1599	AA311801
Sequence 1600	AA311848
Sequence 1601	AA311905
Sequence 1602	AA312218
Sequence 1603	AA312240
Sequence 1604	AA312435
Sequence 1605	AA313108
Sequence 1606	AA313223
Sequence 1607	AA313653
Sequence 1608	AA313994
Sequence 1609	AA314431
Sequence 1610	AA314872
Sequence 1611	AA315363
Sequence 1612	AA315379
Sequence 1613	AA317243
Sequence 1614	AA317393
Sequence 1615	AA318969
Sequence 1616	AA327201
Sequence 1617	AA331991
Sequence 1618	AA332672
Sequence 1619	AA333358
Sequence 1620	AA335273
Sequence 1621	AA336666
Sequence 1622	AA337192
Sequence 1623	AA337489
Sequence 1624	AA338793
Sequence 1625	AA339957
Sequence 1626	AA340341
Sequence 1627	AA341446
Sequence 1628	AA341465
Sequence 1629	AA342969
Sequence 1630	AA343629
Sequence 1631	AA344084
Sequence 1632	AA345329
Sequence 1633	AA346393
Sequence 1634	AA346698
Sequence 1635	AA347887
Sequence 1636	AA350059
Sequence 1637	AA351507
Sequence 1638	AA355003
Sequence 1639	AA356682
Sequence 1640	AA357574
Sequence 1641	AA358887
Sequence 1642	AA359705
Sequence 1643	AA364352
Sequence 1644	AA367451
Sequence 1645	AA367773
Sequence 1646	AA368542
Sequence 1647	AA369400
Sequence 1648	AA373230
Sequence 1649	AA374754
Sequence 1650	AA375312
Sequence 1651	AA375815
Sequence 1652	AA393525
Sequence 1653	AA394115
Sequence 1654	AA398443
Sequence 1655	AA398585
Sequence 1656	AA398739
Sequence 1657	AA399165
Sequence 1658	AA399628
Sequence 1659	AA401329
Sequence 1660	AA401334
Sequence 1661	AA402191

Table 1

Sequence 1662	AA402289
Sequence 1663	AA402775
Sequence 1664	AA403319
Sequence 1665	AA404613
Sequence 1666	AA405124
Sequence 1667	AA406239
Sequence 1668	AA410580
Sequence 1669	AA410982
Sequence 1670	AA411021
Sequence 1671	AA411252
Sequence 1672	AA411764
Sequence 1673	AA417794
Sequence 1674	AA419263
Sequence 1675	AA419284
Sequence 1676	AA420751
Sequence 1677	AA420758
Sequence 1678	AA421248
Sequence 1679	AA421682
Sequence 1680	AA422060
Sequence 1681	AA422143
Sequence 1682	AA425004
Sequence 1683	AA425468
Sequence 1684	AA425737
Sequence 1685	AA429794
Sequence 1686	AA430400
Sequence 1687	AA430436
Sequence 1688	AA431428
Sequence 1689	AA433988
Sequence 1690	AA436315
Sequence 1691	AA436411
Sequence 1692	AA443024
Sequence 1693	AA449394
Sequence 1694	AA451779
Sequence 1695	AA453878
Sequence 1696	AA454668
Sequence 1697	AA454953
Sequence 1698	AA454962
Sequence 1699	AA455245
Sequence 1700	AA455785
Sequence 1701	AA456454
Sequence 1702	AA456557
Sequence 1703	AA457255
Sequence 1704	AA457579
Sequence 1705	AA459167
Sequence 1706	AA459210
Sequence 1707	AA459527
Sequence 1708	AA460570
Sequence 1709	AA460816
Sequence 1710	AA461005
Sequence 1711	AA468657
Sequence 1712	AA469447
Sequence 1713	AA469453
Sequence 1714	AA476522
Sequence 1715	AA477018
Sequence 1716	AA477567
Sequence 1717	AA477973
Sequence 1718	AA478230
Sequence 1719	AA479646
Sequence 1720	AA479648
Sequence 1721	AA479848
Sequence 1722	AA481078
Sequence 1723	AA481710
Sequence 1724	AA482430
Sequence 1725	AA482432
Sequence 1726	AA482779
Sequence 1727	AA483258
Sequence 1728	AA483726
Sequence 1729	AA483858
Sequence 1730	AA484181
Sequence 1731	AA486047
Sequence 1732	AA486859
Sequence 1733	AA488141
Sequence 1734	AA488385
Sequence 1735	AA488517
Sequence 1736	AA489323
Sequence 1737	AA489380
Sequence 1738	AA489382
Sequence 1739	AA491204
Sequence 1740	AA492143
Sequence 1741	AA493371
Sequence 1742	AA494321
Sequence 1743	AA494552
Sequence 1744	AA501657
Sequence 1745	AA502136
Sequence 1746	AA505780
Sequence 1747	AA512933
Sequence 1748	AA514395
Sequence 1749	AA514974
Sequence 1750	AA515143
Sequence 1751	AA516376
Sequence 1752	AA521006
Sequence 1753	AA523522
Sequence 1754	AA524748
Sequence 1755	AA524950
Sequence 1756	AA525141
Sequence 1757	AA526028
Sequence 1758	AA527275
Sequence 1759	AA527557
Sequence 1760	AA533506
Sequence 1761	AA534349
Sequence 1762	AA534586
Sequence 1763	AA534608
Sequence 1764	AA535496
Sequence 1765	AA541651

Table 1

Sequence 1766	AA548056
Sequence 1767	AA548600
Sequence 1768	AA550854
Sequence 1769	AA550855
Sequence 1770	AA551351
Sequence 1771	AA551391
Sequence 1772	AA554437
Sequence 1773	AA554735
Sequence 1774	AA555102
Sequence 1775	AA564272
Sequence 1776	AA564870
Sequence 1777	AA565420
Sequence 1778	AA568936
Sequence 1779	AA569816
Sequence 1780	AA569851
Sequence 1781	AA569916
Sequence 1782	AA573761
Sequence 1783	AA573787
Sequence 1784	AA577537
Sequence 1785	AA578881
Sequence 1786	AA579591
Sequence 1787	AA579890
Sequence 1788	AA580835
Sequence 1789	AA582093
Sequence 1790	AA582866
Sequence 1791	AA583055
Sequence 1792	AA583498
Sequence 1793	AA583567
Sequence 1794	AA583773
Sequence 1795	AA584921
Sequence 1796	AA586755
Sequence 1797	AA587140
Sequence 1798	AA587315
Sequence 1799	AA587873
Sequence 1800	AA593983
Sequence 1801	AA594366
Sequence 1802	AA595624
Sequence 1803	AA595771
Sequence 1804	AA599454
Sequence 1805	AA600227
Sequence 1806	AA600771
Sequence 1807	AA601172
Sequence 1808	AA602395
Sequence 1809	AA602871
Sequence 1810	AA603125
Sequence 1811	AA603177
Sequence 1812	AA604324
Sequence 1813	AA604853
Sequence 1814	AA610279
Sequence 1815	AA610476
Sequence 1816	AA610734
Sequence 1817	AA614482
Sequence 1818	AA628536
Sequence 1819	AA628547
Sequence 1820	AA630611
Sequence 1821	AA631326
Sequence 1822	AA633909
Sequence 1823	AA634260
Sequence 1824	AA634298
Sequence 1825	AA640505
Sequence 1826	AA641289
Sequence 1827	AA644625
Sequence 1828	AA648944
Sequence 1829	AA651720
Sequence 1830	AA652478
Sequence 1831	AA652505
Sequence 1832	AA653775
Sequence 1833	AA658374
Sequence 1834	AA663005
Sequence 1835	AA669154
Sequence 1836	AA677560
Sequence 1837	AA677750
Sequence 1838	AA678185
Sequence 1839	AA678251
Sequence 1840	AA687495
Sequence 1841	AA703208
Sequence 1842	AA703667
Sequence 1843	AA703907
Sequence 1844	AA704208
Sequence 1845	AA706347
Sequence 1846	AA714010
Sequence 1847	AA715984
Sequence 1848	AA716651
Sequence 1849	AA719530
Sequence 1850	AA721642
Sequence 1851	AA729381
Sequence 1852	AA731946
Sequence 1853	AA736817
Sequence 1854	AA742713
Sequence 1855	AA743278
Sequence 1856	AA744681
Sequence 1857	AA745953
Sequence 1858	AA759195
Sequence 1859	AA767779
Sequence 1860	AA769697
Sequence 1861	AA773998
Sequence 1862	AA775058
Sequence 1863	AA776593
Sequence 1864	AA777384
Sequence 1865	AA778672
Sequence 1866	AA779949
Sequence 1867	AA781487
Sequence 1868	AA788907
Sequence 1869	AA806278

Table 1

Sequence 1870	AA806735
Sequence 1871	AA808769
Sequence 1872	AA810149
Sequence 1873	AA811609
Sequence 1874	AA813604
Sequence 1875	AA826307
Sequence 1876	AA833766
Sequence 1877	AA833900
Sequence 1878	AA837457
Sequence 1879	AA843531
Sequence 1880	AA845737
Sequence 1881	AA846698
Sequence 1882	AA846856
Sequence 1883	AA852896
Sequence 1884	AA856902
Sequence 1885	AA857824
Sequence 1886	AA857882
Sequence 1887	AA861665
Sequence 1888	AA865960
Sequence 1889	AA868529
Sequence 1890	AA873271
Sequence 1891	AA877189
Sequence 1892	AA884922
Sequence 1893	AA886453
Sequence 1894	AA906652
Sequence 1895	AA906865
Sequence 1896	AA918993
Sequence 1897	AA926926
Sequence 1898	AA928934
Sequence 1899	AA932501
Sequence 1900	AA933987
Sequence 1901	AA935947
Sequence 1902	AA937302
Sequence 1903	AA937773
Sequence 1904	AA947835
Sequence 1905	AA954939
Sequence 1906	AA962587
Sequence 1907	AA962632
Sequence 1908	AA972525
Sequence 1909	AA976489
Sequence 1910	AA983380
Sequence 1911	AA984586
Sequence 1912	AA992596
Sequence 1913	AB002305
Sequence 1914	AB002330
Sequence 1915	AB002357
Sequence 1916	AB002806
Sequence 1917	AB003476
Sequence 1918	AB004066
Sequence 1919	AB006077
Sequence 1920	AB006534
Sequence 1921	AB006755
Sequence 1922	AB007867
Sequence 1923	AB007900
Sequence 1924	AB007916
Sequence 1925	AB007923
Sequence 1926	AB007957
Sequence 1927	AB011103
Sequence 1928	AB011143
Sequence 1929	AB011151
Sequence 1930	AB011166
Sequence 1931	AB014533
Sequence 1932	AB014542
Sequence 1933	AB014560
Sequence 1934	AB015630
Sequence 1935	AB015856
Sequence 1936	AB018281
Sequence 1937	AB018284
Sequence 1938	AB018285
Sequence 1939	AB018289
Sequence 1940	AB018305
Sequence 1941	AB018327
Sequence 1942	AB018331
Sequence 1943	AB018337
Sequence 1944	AB019409
Sequence 1945	AB019563
Sequence 1946	AB019568
Sequence 1947	AB019691
Sequence 1948	AB020682
Sequence 1949	AB020718
Sequence 1950	AB021288
Sequence 1951	AB023154
Sequence 1952	AB023219
Sequence 1953	AB024704
Sequence 1954	AB027467
Sequence 1955	AB028069
Sequence 1956	AB028624
Sequence 1957	AB028969
Sequence 1958	AB028986
Sequence 1959	AB029000
Sequence 1960	AB029004
Sequence 1961	AB029028
Sequence 1962	AC03044
Sequence 1963	AC31479
Sequence 1964	AF000670
Sequence 1965	AF000974
Sequence 1966	AF001893
Sequence 1967	AF004562
Sequence 1968	AF006043
Sequence 1969	AF007135
Sequence 1970	AF007151
Sequence 1971	AF007170
Sequence 1972	AF009615
Sequence 1973	AF013759

Table 1

Sequence 1974	AF013988
Sequence 1975	AF015283
Sequence 1976	AF015767
Sequence 1977	AF016507
Sequence 1978	AF016582
Sequence 1979	AF017790
Sequence 1980	AF019767
Sequence 1981	AF021351
Sequence 1982	AF021819
Sequence 1983	AF022229
Sequence 1984	AF023266
Sequence 1985	AF025439
Sequence 1986	AF026166
Sequence 1987	AF026939
Sequence 1988	AF027205
Sequence 1989	AF031385
Sequence 1990	AF034607
Sequence 1991	AF035286
Sequence 1992	AF035309
Sequence 1993	AF035313
Sequence 1994	AF037204
Sequence 1995	AF038661
Sequence 1996	AF039019
Sequence 1997	AF039291
Sequence 1998	AF039843
Sequence 1999	AF040990
Sequence 2000	AF041483
Sequence 2001	AF042385
Sequence 2002	AF042729
Sequence 2003	AF044588
Sequence 2004	AF045184
Sequence 2005	AF047438
Sequence 2006	AF047472
Sequence 2007	AF048977
Sequence 2008	AF050171
Sequence 2009	AF050199
Sequence 2010	AF050639
Sequence 2011	AF052124
Sequence 2012	AF052135
Sequence 2013	AF052149
Sequence 2014	AF052164
Sequence 2015	AF052169
Sequence 2016	AF052180
Sequence 2017	AF052514
Sequence 2018	AF054183
Sequence 2019	AF054187
Sequence 2020	AF054840
Sequence 2021	AF055012
Sequence 2022	AF055033
Sequence 2023	AF057299
Sequence 2024	AF059252
Sequence 2025	AF061258
Sequence 2026	AF062318
Sequence 2027	AF063611
Sequence 2028	AF064019
Sequence 2029	AF068235
Sequence 2030	AF068846
Sequence 2031	AF070523
Sequence 2032	AF070537
Sequence 2033	AF070555
Sequence 2034	AF070561
Sequence 2035	AF070596
Sequence 2036	AF070600
Sequence 2037	AF070626
Sequence 2038	AF070649
Sequence 2039	AF070662
Sequence 2040	AF070672
Sequence 2041	AF071202
Sequence 2042	AF071219
Sequence 2043	AF071593
Sequence 2044	AF073298
Sequence 2045	AF075587
Sequence 2046	AF077030
Sequence 2047	AF077045
Sequence 2048	AF077200
Sequence 2049	AF077202
Sequence 2050	AF077207
Sequence 2051	AF081192
Sequence 2052	AF081484
Sequence 2053	AF083190
Sequence 2054	AF085355
Sequence 2055	AF086003
Sequence 2056	AF086116
Sequence 2057	AF086178
Sequence 2058	AF086205
Sequence 2059	AF086207
Sequence 2060	AF086336
Sequence 2061	AF086517
Sequence 2062	AF087135
Sequence 2063	AF087990
Sequence 2064	AF088036
Sequence 2065	AF091076
Sequence 2066	AF092563
Sequence 2067	AF095287
Sequence 2068	AF095791
Sequence 2069	AF097709
Sequence 2070	AF100741
Sequence 2071	AF100756
Sequence 2072	AF100928
Sequence 2073	AF104222
Sequence 2074	AF104913
Sequence 2075	AF104923
Sequence 2076	AF107405
Sequence 2077	AF120334

Table 1

Sequence 2078	AF124438
Sequence 2079	AF124439
Sequence 2080	AF125525
Sequence 2081	AF131799
Sequence 2082	AF131814
Sequence 2083	AF139461
Sequence 2084	AF139658
Sequence 2085	AF144755
Sequence 2086	AF147331
Sequence 2087	AF150962
Sequence 2088	AF151832
Sequence 2089	AF151868
Sequence 2090	AF151898
Sequence 2091	AF151907
Sequence 2092	AF152097
Sequence 2093	AF159295
Sequence 2094	AF176702
Sequence 2095	AF190744
Sequence 2096	AI004664
Sequence 2097	AI004915
Sequence 2098	AI016073
Sequence 2099	AI016323
Sequence 2100	AI016791
Sequence 2101	AI018451
Sequence 2102	AI018625
Sequence 2103	AI022779
Sequence 2104	AI023799
Sequence 2105	AI026164
Sequence 2106	AI027516
Sequence 2107	AI031636
Sequence 2108	AI033037
Sequence 2109	AI034115
Sequence 2110	AI037859
Sequence 2111	AI041670
Sequence 2112	AI042034
Sequence 2113	AI042290
Sequence 2114	AI051971
Sequence 2115	AI056917
Sequence 2116	AI057124
Sequence 2117	AI066419
Sequence 2118	AI078041
Sequence 2119	AI081116
Sequence 2120	AI081472
Sequence 2121	AI081913
Sequence 2122	AI082244
Sequence 2123	AI082648
Sequence 2124	AI084731
Sequence 2125	AI085381
Sequence 2126	AI087291
Sequence 2127	AI087819
Sequence 2128	AI088178
Sequence 2129	AI089981
Sequence 2130	AI090524
Sequence 2131	AI090623
Sequence 2132	AI091425
Sequence 2133	AI092971
Sequence 2134	AI095477
Sequence 2135	AI123229
Sequence 2136	AI125642
Sequence 2137	AI125874
Sequence 2138	AI127013
Sequence 2139	AI127556
Sequence 2140	AI140291
Sequence 2141	AI141130
Sequence 2142	AI141847
Sequence 2143	AI143899
Sequence 2144	AI144100
Sequence 2145	AI148251
Sequence 2146	AI149429
Sequence 2147	AI149592
Sequence 2148	AI186028
Sequence 2149	AI186042
Sequence 2150	AI190341
Sequence 2151	AI192367
Sequence 2152	AI192629
Sequence 2153	AI198930
Sequence 2154	AI216969
Sequence 2155	AI217003
Sequence 2156	AI223292
Sequence 2157	AI241706
Sequence 2158	AI251743
Sequence 2159	AI252466
Sequence 2160	AI253330
Sequence 2161	AI253335
Sequence 2162	AI253338
Sequence 2163	AI253375
Sequence 2164	AI253379
Sequence 2165	AI253436
Sequence 2166	AI262380
Sequence 2167	AI263674
Sequence 2168	AI267162
Sequence 2169	AI267185
Sequence 2170	AI267209
Sequence 2171	AI267289
Sequence 2172	AI267307
Sequence 2173	AI267321
Sequence 2174	AI267454
Sequence 2175	AI267502
Sequence 2176	AI268293
Sequence 2177	AI269060
Sequence 2178	AI269369
Sequence 2179	AI270183
Sequence 2180	AI270472
Sequence 2181	AI271786

Table 1

Sequence 2182	AI272827
Sequence 2183	AI274047
Sequence 2184	AI276341
Sequence 2185	AI276839
Sequence 2186	AI278611
Sequence 2187	AI280022
Sequence 2188	AI283548
Sequence 2189	AI288965
Sequence 2190	AI290565
Sequence 2191	AI291683
Sequence 2192	AI292286
Sequence 2193	AI298472
Sequence 2194	AI298941
Sequence 2195	AI304857
Sequence 2196	AI308959
Sequence 2197	AI312552
Sequence 2198	AI333055
Sequence 2199	AI333116
Sequence 2200	AI335249
Sequence 2201	AI336326
Sequence 2202	AI345325
Sequence 2203	AI366549
Sequence 2204	AI367850
Sequence 2205	AI375624
Sequence 2206	AI376561
Sequence 2207	AI399636
Sequence 2208	AI417384
Sequence 2209	AI421720
Sequence 2210	AI424841
Sequence 2211	AI431507
Sequence 2212	AI433180
Sequence 2213	AI434084
Sequence 2214	AI434401
Sequence 2215	AI436016
Sequence 2216	AI436448
Sequence 2217	AI446503
Sequence 2218	AI453199
Sequence 2219	AI459028
Sequence 2220	AI469237
Sequence 2221	AI492520
Sequence 2222	AI492769
Sequence 2223	AI494344
Sequence 2224	AI523940
Sequence 2225	AI524677
Sequence 2226	AI538682
Sequence 2227	AI557059
Sequence 2228	AI561260
Sequence 2229	AI567988
Sequence 2230	AI569715
Sequence 2231	AI581291
Sequence 2232	AI583211
Sequence 2233	AI583570
Sequence 2234	AI589301
Sequence 2235	AI597938
Sequence 2236	AI608591
Sequence 2237	AI608787
Sequence 2238	AI608968
Sequence 2239	AI609193
Sequence 2240	AI609281
Sequence 2241	AI623804
Sequence 2242	AI628689
Sequence 2243	AI636635
Sequence 2244	AI650837
Sequence 2245	AI654096
Sequence 2246	AI660245
Sequence 2247	AI669253
Sequence 2248	AI670084
Sequence 2249	AI674313
Sequence 2250	AI678152
Sequence 2251	AI678703
Sequence 2252	AI679044
Sequence 2253	AI679321
Sequence 2254	AI683140
Sequence 2255	AI683338
Sequence 2256	AI683793
Sequence 2257	AI688798
Sequence 2258	AI692866
Sequence 2259	AI694087
Sequence 2260	AI696819
Sequence 2261	AI697501
Sequence 2262	AI734922
Sequence 2263	AI735069
Sequence 2264	AI739337
Sequence 2265	AI739377
Sequence 2266	AI743595
Sequence 2267	AI743691
Sequence 2268	AI750198
Sequence 2269	AI750909
Sequence 2270	AI751119
Sequence 2271	AI751364
Sequence 2272	AI751565
Sequence 2273	AI752319
Sequence 2274	AI752553
Sequence 2275	AI752929
Sequence 2276	AI753108
Sequence 2277	AI753671
Sequence 2278	AI754437
Sequence 2279	AI755181
Sequence 2280	AI758869
Sequence 2281	AI761927
Sequence 2282	AI763126
Sequence 2283	AI791906
Sequence 2284	AI793120
Sequence 2285	AI799521

Table 1

Sequence 2286	AI804346
Sequence 2287	AI808109
Sequence 2288	AI811021
Sequence 2289	AI811845
Sequence 2290	AI814139
Sequence 2291	AI814674
Sequence 2292	AI815868
Sequence 2293	AI822030
Sequence 2294	AI827641
Sequence 2295	AI859619
Sequence 2296	AI864580
Sequence 2297	AI878968
Sequence 2298	AI879179
Sequence 2299	AI879367
Sequence 2300	AI879992
Sequence 2301	AI888377
Sequence 2302	AI911704
Sequence 2303	AI911997
Sequence 2304	AI912084
Sequence 2305	AI916284
Sequence 2306	AI916584
Sequence 2307	AI923224
Sequence 2308	AI924096
Sequence 2309	AI928185
Sequence 2310	AI929819
Sequence 2311	AI936748
Sequence 2312	AI950087
Sequence 2313	AI955808
Sequence 2314	AJ001258
Sequence 2315	AJ002030
Sequence 2316	AJ006026
Sequence 2317	AJ011001
Sequence 2318	AJ011915
Sequence 2319	AJ012499
Sequence 2320	AJ223183
Sequence 2321	AL035802
Sequence 2322	AL035987
Sequence 2323	AL036801
Sequence 2324	AL037646
Sequence 2325	AL038985
Sequence 2326	AL039150
Sequence 2327	AL041780
Sequence 2328	AL044019
Sequence 2329	AL046804
Sequence 2330	AL049055
Sequence 2331	AL049227
Sequence 2332	AL049229
Sequence 2333	AL049296
Sequence 2334	AL049464
Sequence 2335	AL049953
Sequence 2336	AL049954
Sequence 2337	AL049955
Sequence 2338	AL049959
Sequence 2339	AL049987
Sequence 2340	AL049999
Sequence 2341	AL050011
Sequence 2342	AL050089
Sequence 2343	AL050141
Sequence 2344	AL050171
Sequence 2345	AL050187
Sequence 2346	AL050198
Sequence 2347	AL050217
Sequence 2348	AL050392
Sequence 2349	AL080062
Sequence 2350	AL080186
Sequence 2351	AL080235
Sequence 2352	AL096857
Sequence 2353	AL096858
Sequence 2354	AL110197
Sequence 2355	AL110235
Sequence 2356	AL117237
Sequence 2357	AL117499
Sequence 2358	AL117534
Sequence 2359	AL118999
Sequence 2360	AL119085
Sequence 2361	AL119157
Sequence 2362	AW020479
Sequence 2363	AW044114
Sequence 2364	AW102841
Sequence 2365	C02094
Sequence 2366	C16886
Sequence 2367	C18886
Sequence 2368	D00017
Sequence 2369	D00022
Sequence 2370	D00068
Sequence 2371	D00099
Sequence 2372	D00422
Sequence 2373	D10495
Sequence 2374	D13119
Sequence 2375	D13287
Sequence 2376	D13665
Sequence 2377	D13866
Sequence 2378	D14662
Sequence 2379	D14697
Sequence 2380	D14710
Sequence 2381	D14812
Sequence 2382	D15049
Sequence 2383	D16431
Sequence 2384	D16937
Sequence 2385	D17188
Sequence 2386	D17268
Sequence 2387	D17409
Sequence 2388	D17793
Sequence 2389	D21063

Table 1

Sequence 2390	D23660
Sequence 2391	D25542
Sequence 2392	D28759
Sequence 2393	D29677
Sequence 2394	D31767
Sequence 2395	D31784
Sequence 2396	D31883
Sequence 2397	D31890
Sequence 2398	D37991
Sequence 2399	D38491
Sequence 2400	D38583
Sequence 2401	D43948
Sequence 2402	D43950
Sequence 2403	D45248
Sequence 2404	D45887
Sequence 2405	D45915
Sequence 2406	D49489
Sequence 2407	D49547
Sequence 2408	D50310
Sequence 2409	D50371
Sequence 2410	D55192
Sequence 2411	D55649
Sequence 2412	D56120
Sequence 2413	D59253
Sequence 2414	D78586
Sequence 2415	D79826
Sequence 2416	D79983
Sequence 2417	D79986
Sequence 2418	D79997
Sequence 2419	D80006
Sequence 2420	D80012
Sequence 2421	D80087
Sequence 2422	D80253
Sequence 2423	D81635
Sequence 2424	D82128
Sequence 2425	D82348
Sequence 2426	D83197
Sequence 2427	D83327
Sequence 2428	D83784
Sequence 2429	D86227
Sequence 2430	D87437
Sequence 2431	D87442
Sequence 2432	D87470
Sequence 2433	D87666
Sequence 2434	D87667
Sequence 2435	D87682
Sequence 2436	D87735
Sequence 2437	D87969
Sequence 2438	D89052
Sequence 2439	D90226
Sequence 2440	D90373
Sequence 2441	E00882
Sequence 2442	E01650
Sequence 2443	E01797
Sequence 2444	E01813
Sequence 2445	E01827
Sequence 2446	E01979
Sequence 2447	E02628
Sequence 2448	E02651
Sequence 2449	E03569
Sequence 2450	E06721
Sequence 2451	E07218
Sequence 2452	F28779
Sequence 2453	F30276
Sequence 2454	F31082
Sequence 2455	H03854
Sequence 2456	H05412
Sequence 2457	H08994
Sequence 2458	H13339
Sequence 2459	H16426
Sequence 2460	H39960
Sequence 2461	H48742
Sequence 2462	H59372
Sequence 2463	H60722
Sequence 2464	H69238
Sequence 2465	H72481
Sequence 2466	H75695
Sequence 2467	H78517
Sequence 2468	H79084
Sequence 2469	H84729
Sequence 2470	H85709
Sequence 2471	H89654
Sequence 2472	J00269
Sequence 2473	J02621
Sequence 2474	J03005
Sequence 2475	J03040
Sequence 2476	J03171
Sequence 2477	J03191
Sequence 2478	J03210
Sequence 2479	J03464
Sequence 2480	J03473
Sequence 2481	J03799
Sequence 2482	J04080
Sequence 2483	J04164
Sequence 2484	J04177
Sequence 2485	J04765
Sequence 2486	J05013
Sequence 2487	J05021
Sequence 2488	J05192
Sequence 2489	J05633
Sequence 2490	K00558
Sequence 2491	K01566
Sequence 2492	K02765
Sequence 2493	L00160

Table 1

Sequence 2494	L02547
Sequence 2495	L05092
Sequence 2496	L05186
Sequence 2497	L07633
Sequence 2498	L11066
Sequence 2499	L11932
Sequence 2500	L12711
Sequence 2501	L13848
Sequence 2502	L14599
Sequence 2503	L19161
Sequence 2504	L19184
Sequence 2505	L19597
Sequence 2506	L20941
Sequence 2507	L23959
Sequence 2508	L26081
Sequence 2509	L27560
Sequence 2510	L28010
Sequence 2511	L28809
Sequence 2512	L33404
Sequence 2513	L33930
Sequence 2514	L34155
Sequence 2515	L34839
Sequence 2516	L38486
Sequence 2517	L42024
Sequence 2518	L43575
Sequence 2519	L44349
Sequence 2520	L54057
Sequence 2521	M10036
Sequence 2522	M10119
Sequence 2523	M10905
Sequence 2524	M11146
Sequence 2525	M13573
Sequence 2526	M13955
Sequence 2527	M14083
Sequence 2528	M14483
Sequence 2529	M14630
Sequence 2530	M14631
Sequence 2531	M15182
Sequence 2532	M15800
Sequence 2533	M16247
Sequence 2534	M16553
Sequence 2535	M16660
Sequence 2536	M16937
Sequence 2537	M17597
Sequence 2538	M17885
Sequence 2539	M20372
Sequence 2540	M22146
Sequence 2541	M22382
Sequence 2542	M22590
Sequence 2543	M22918
Sequence 2544	M22920
Sequence 2545	M23613
Sequence 2546	M24194
Sequence 2547	M25246
Sequence 2548	M26041
Sequence 2549	M26152
Sequence 2550	M26325
Sequence 2551	M27913
Sequence 2552	M27971
Sequence 2553	M28373
Sequence 2554	M31159
Sequence 2555	M31212
Sequence 2556	M31899
Sequence 2557	M32110
Sequence 2558	M32790
Sequence 2559	M32798
Sequence 2560	M33308
Sequence 2561	M34064
Sequence 2562	M37583
Sequence 2563	M38106
Sequence 2564	M55409
Sequence 2565	M55542
Sequence 2566	M58485
Sequence 2567	M60457
Sequence 2568	M60854
Sequence 2569	M62403
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Sequence 2571	M64241
Sequence 2572	M67468
Sequence 2573	M69181
Sequence 2574	M74002
Sequence 2575	M75126
Sequence 2576	M76729
Sequence 2577	M78113
Sequence 2578	M81757
Sequence 2579	M83248
Sequence 2580	M84739
Sequence 2581	M87503
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Sequence 2583	M92357
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Sequence 2585	N34255
Sequence 2586	N35187
Sequence 2587	N35421
Sequence 2588	N39717
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Sequence 2590	N40852
Sequence 2591	N67927
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Sequence 2593	N76677
Sequence 2594	N77080
Sequence 2595	N84497
Sequence 2596	N86776
Sequence 2597	N91638

Table 1

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Sequence 2601	Q48043
Sequence 2602	Q65676
Sequence 2603	Q90526
Sequence 2604	R06046
Sequence 2605	R17092
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Sequence 2609	R68132
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Sequence 2612	R78333
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Sequence 2615	R99649
Sequence 2616	S41458
Sequence 2617	S42303
Sequence 2618	S54005
Sequence 2619	S66431
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Sequence 2621	S70290
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Sequence 2625	T24119
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Sequence 2627	T53479
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Sequence 2636	U07857
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Sequence 2640	U12465
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Sequence 2642	U13877
Sequence 2643	U14550
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Sequence 2651	U22431
Sequence 2652	U22815
Sequence 2653	U24105
Sequence 2654	U24153
Sequence 2655	U27768
Sequence 2656	U33760
Sequence 2657	U33833
Sequence 2658	U34877
Sequence 2659	U39361
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Sequence 2662	U50733
Sequence 2663	U51586
Sequence 2664	U56255
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Sequence 2667	U61083
Sequence 2668	U61397
Sequence 2669	U63846
Sequence 2670	U67784
Sequence 2671	U68723
Sequence 2672	U68727
Sequence 2673	U68758
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Sequence 2677	U79274
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Sequence 2679	U80213
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Sequence 2681	U82130
Sequence 2682	U86602
Sequence 2683	U87309
Sequence 2684	U90028
Sequence 2685	U90441
Sequence 2686	U90902
Sequence 2687	U90917
Sequence 2688	U94831
Sequence 2689	V00478
Sequence 2690	V00503
Sequence 2691	V05728
Sequence 2692	V11636
Sequence 2693	V57903
Sequence 2694	V59662
Sequence 2695	V59746
Sequence 2696	V84428
Sequence 2697	V86232
Sequence 2698	V87930
Sequence 2699	W07215
Sequence 2700	W19127
Sequence 2701	W19407

Table 1

Sequence 2702	W19441
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Sequence 2704	W26197
Sequence 2705	W38952
Sequence 2706	W56388
Sequence 2707	W68015
Sequence 2708	W73140
Sequence 2709	W73168
Sequence 2710	W76204
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Sequence 2713	X00351
Sequence 2714	X00497
Sequence 2715	X01742
Sequence 2716	X01924
Sequence 2717	X03084
Sequence 2718	X04098
Sequence 2719	X04408
Sequence 2720	X04470
Sequence 2721	X05276
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Sequence 2723	X06700
Sequence 2724	X07819
Sequence 2725	X13425
Sequence 2726	X14420
Sequence 2727	X15729
Sequence 2728	X15880
Sequence 2729	X16869
Sequence 2730	X17206
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Sequence 2733	X37509
Sequence 2734	X40178
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Sequence 2737	X54304
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Sequence 2740	X55885
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Sequence 2745	X62744
Sequence 2746	X63432
Sequence 2747	X66360
Sequence 2748	X67698
Sequence 2749	X68277
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Sequence 2752	X69838
Sequence 2753	X70340
Sequence 2754	X71087
Sequence 2755	X73608
Sequence 2756	X73902
Sequence 2757	X74039
Sequence 2758	X74801
Sequence 2759	X74979
Sequence 2760	X76013
Sequence 2761	X76180
Sequence 2762	X78627
Sequence 2763	X81109
Sequence 2764	X82676
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Sequence 2774	Y00757
Sequence 2775	Y00815
Sequence 2776	Y09188
Sequence 2777	Y11435
Sequence 2778	Y12065
Sequence 2779	Y13247
Sequence 2780	Y13286
Sequence 2781	Y15286
Sequence 2782	Y17114
Sequence 2783	Z18538
Sequence 2784	Z18954
Sequence 2785	Z19054
Sequence 2786	Z21507
Sequence 2787	Z26317
Sequence 2788	Z29093
Sequence 2789	Z31696
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Sequence 2791	Z36531
Sequence 2792	Z37986
Sequence 2793	Z46629
Sequence 2794	Z47087
Sequence 2795	Z74615

Table 1

Sequence 340: found in patent publication W098/39446
AGGCGTNCCTCTGACTGCCCACTCAGTGGCNNCACCNGGGAGCTGNTTTGGNGCTTTGGG
GANCCTNAACANTTNCNTCTTTCAAAACTNACTGGC

Sequence 1962: found in patent publication W098/42738
AGGTACCCGCTCTCCTGCTTCAGTAAATCTCCACTCGATCTCAGTGGGTTTCCTGTCCAT
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CCGGTAATCCATGGTCTTGCCAATGTAGCCGGTAATGTGTGTTCAGCCCTCCCACGACCA
CCCAGTTTCGCTGCCGGATAACTTGAACCACTTTGCCCTGCTTCCCGGCATCCTTGCCTT
CTAGGATCTCCACCGTGTCCCCACAGAACAGATACCAAGTCTTCATCAGAGATGGGTTCC
ACAACCACTGGGCCGCCGNCTGATCCATGGGGGGTTCTTCCTCTTGTCTGCAACAGAGCC
TGGGGGGCTCATCCATAACGGTNATGGGGGGGCAGAGTGACCTTGGATGCCAAGGCCAGC
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Sequence 341: found in patent publication W099/039941
CCCTTAGCGNGGTCGCGGCCGAGGCACAATTCGATTATTCACANGAAAGGGCAAACTGTT
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CAGGACATTTTATCTCTGTGCAAAGACCGGAGTAGAAGCTGATGAGTGGATCAAGATATT
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CTCGGTCGTTCATCTTTAAATAGATCTTTCTTGCCAAGGAATGCTCTGGCCCAGGAGCAA
GGTGGAATGCTTCCCTGACGCTGCGATCTGCAGCAGACTNCAAATGAAAACCGACTAAGG
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GACTCACCGTTGCTGCCCTTNCATGGATGTTGCCATCTGCTTGAGAACACTGAAGCAATC
ACCATTCTNGATANGAAAGTGCTTAAACCCCCACTCTTAGGGCTGCTCACTTCTTAGAAC
ACACAAAGGGAAGAGGAAAGGGGT

Sequence 342: found in patent publication W099/18126
CCGCGGTGGCGGCCGCCCGGGCAGGTACCTACAGTGACACAGATCCCCTCCCGCCATCCT
GGTCACACTGAATAACAAAGGGAAGAGAGGAGTAAGAACTGTAGTATCTAGAAATTCTCA
GCACAGTGAAGGAAAGTGATCTTCTACTTTGTATTCAGGCCTAAAAAAGGAGGGGACGGG
CCCGGCACAGTGGCTCACACCTGTAATCCCAGCACTCTGGGAGGCCAAGGAGGGCAGATC
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AGGGAG

Sequence 1016: found in patent publication W099/38881
CTACTTAGGGCGAATTGGAGCTCCCCGCGGTGGCGGCCGAGGTCAAGCTTCGACCCCGCG
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ATTCCGGCTTGTAATATATCAGCCTCTACAATGAAATGCAGAAGAGTTCATTTTTCTAG
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Sequence 1963: found in patent publication W099/46289
AACTGGACAGAGTAAGGGAATTCCAGCATCCTCTTCCTGCTTGCTCGTGTTACCCCACAG

Table 1

ATCAAACCCTCAATTCTAGTTGGGGATGCTGTCTAGCCCCACACCATGACTGAAGCCTTA
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TTAACTTTTATGTCTACTTAACAAGAGAACCTGNAGAAAACTACCGTATTCAAGAGATA
ATCAAAATCAGTGTTTTAGCCAGGCGATGACAGAGAAGCACCATTCCTCACCCTCCATTC
TTGTAATGTCTGTAATAAATTTCAGTGCGTCAGGATGGATGAACCCAAGATCCAGTGAAT
GATTCAGCTGTTCCAAGCCTTACATTTTCCATCATTCATCATCCATTCTCATTCAGTGA
ACCTCTTGCACTATTGTGGTTAATTTTATGTAAAACCAGTTTATGTTTTTTTTTTAATAT
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TABLE 1A

patent seq name	acc	dbase
Sequence 1	AA001066	dbEST
Sequence 2	AA007157	dbEST
Sequence 3	AA010954	dbEST
Sequence 4	AA015792	dbEST
Sequence 5	AA019769	dbEST
Sequence 6	AA019948	dbEST
Sequence 7	AA022925	dbEST
Sequence 8	AA022937	dbEST
Sequence 9	AA024405	dbEST
Sequence 10	AA029750	dbEST
Sequence 11	AA031509	dbEST
Sequence 12	AA033876	dbEST
Sequence 13	AA034237	dbEST
Sequence 14	AA039967	dbEST
Sequence 15	AA040073	dbEST
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Sequence 18	AA045861	dbEST
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Sequence 21	AA047417	dbEST
Sequence 22	AA053486	dbEST
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Sequence 25	AA056113	dbEST
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Sequence 101	AA157788	dbEST
Sequence 102	AA158165	dbEST
Sequence 103	AA158171	dbEST

TABLE 1A

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Sequence 111	AA165629	dbEST	Sequence 163	AA307477	dbEST
Sequence 112	AA166973	dbEST	Sequence 164	AA307504	dbEST
Sequence 113	AA171510	dbEST	Sequence 165	AA307697	dbEST
Sequence 114	AA173031	dbEST	Sequence 166	AA307779	dbEST
Sequence 115	AA173470	dbEST	Sequence 167	AA308062	dbEST
Sequence 116	AA173630	dbEST	Sequence 168	AA308801	dbEST
Sequence 117	AA179462	dbEST	Sequence 169	AA309028	dbEST
Sequence 118	AA187003	dbEST	Sequence 170	AA309988	dbEST
Sequence 119	AA187958	dbEST	Sequence 171	AA311006	dbEST
Sequence 120	AA188591	dbEST	Sequence 172	AA311481	dbEST
Sequence 121	AA192108	dbEST	Sequence 173	AA312012	dbEST
Sequence 122	AA199710	dbEST	Sequence 174	AA313684	dbEST
Sequence 123	AA203224	dbEST	Sequence 175	AA314146	dbEST
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Sequence 129	AA216612	dbEST	Sequence 181	AA320346	dbEST
Sequence 130	AA224230	dbEST	Sequence 182	AA320991	dbEST
Sequence 131	AA224985	dbEST	Sequence 183	AA328544	dbEST
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Sequence 133	AA229225	dbEST	Sequence 185	AA338793	dbEST
Sequence 134	AA232626	dbEST	Sequence 186	AA340069	dbEST
Sequence 135	AA233843	dbEST	Sequence 187	AA341170	dbEST
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Sequence 139	AA256959	dbEST	Sequence 191	AA351443	dbEST
Sequence 140	AA259077	dbEST	Sequence 192	AA351880	dbEST
Sequence 141	AA262440	dbEST	Sequence 193	AA356158	dbEST
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Sequence 147	AA292334	dbEST	Sequence 199	AA377718	dbEST
Sequence 148	AA292385	dbEST	Sequence 200	AA380997	dbEST
Sequence 149	AA292771	dbEST	Sequence 201	AA383917	dbEST
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Sequence 151	AA293572	dbEST	Sequence 203	AA389641	dbEST
Sequence 152	AA295348	dbEST	Sequence 204	AA393164	dbEST
Sequence 153	AA295485	dbEST	Sequence 205	AA393236	dbEST
Sequence 154	AA301631	dbEST	Sequence 206	AA394242	dbEST
Sequence 155	AA304669	dbEST	Sequence 207	AA398732	dbEST

TABLE 1A

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Sequence 209	AA410508	dbEST	Sequence 261	AA574237	dbEST
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Sequence 211	AA410942	dbEST	Sequence 263	AA579034	dbEST
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Sequence 215	AA418473	dbEST	Sequence 267	AA582093	dbEST
Sequence 216	AA418970	dbEST	Sequence 268	AA583091	dbEST
Sequence 217	AA420789	dbEST	Sequence 269	AA584411	dbEST
Sequence 218	AA421682	dbEST	Sequence 270	AA586776	dbEST
Sequence 219	AA421850	dbEST	Sequence 271	AA587110	dbEST
Sequence 220	AA424529	dbEST	Sequence 272	AA587233	dbEST
Sequence 221	AA428421	dbEST	Sequence 273	AA587700	dbEST
Sequence 222	AA429754	dbEST	Sequence 274	AA609259	dbEST
Sequence 223	AA441787	dbEST	Sequence 275	AA609837	dbEST
Sequence 224	AA451633	dbEST	Sequence 276	AA613907	dbEST
Sequence 225	AA453309	dbEST	Sequence 277	AA614529	dbEST
Sequence 226	AA453559	dbEST	Sequence 278	AA618033	dbEST
Sequence 227	AA453570	dbEST	Sequence 279	AA628487	dbEST
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Sequence 230	AA456892	dbEST	Sequence 282	AA640901	dbEST
Sequence 231	AA457048	dbEST	Sequence 283	AA641841	dbEST
Sequence 232	AA463426	dbEST	Sequence 284	AA642215	dbEST
Sequence 233	AA465039	dbEST	Sequence 285	AA643602	dbEST
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Sequence 235	AA480921	dbEST	Sequence 287	AA664996	dbEST
Sequence 236	AA484050	dbEST	Sequence 288	AA668297	dbEST
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Sequence 243	AA501749	dbEST	Sequence 295	AA746481	dbEST
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Sequence 245	AA501945	dbEST	Sequence 297	AA772570	dbEST
Sequence 246	AA504490	dbEST	Sequence 298	AA772790	dbEST
Sequence 247	AA507234	dbEST	Sequence 299	AA776709	dbEST
Sequence 248	AA513640	dbEST	Sequence 300	AA776811	dbEST
Sequence 249	AA526227	dbEST	Sequence 301	AA777384	dbEST
Sequence 250	AA526889	dbEST	Sequence 302	AA778116	dbEST
Sequence 251	AA527139	dbEST	Sequence 303	AA779868	dbEST
Sequence 252	AA527188	dbEST	Sequence 304	AA781343	dbEST
Sequence 253	AA531428	dbEST	Sequence 305	AA809984	dbEST
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Sequence 255	AA535471	dbEST	Sequence 307	AA811200	dbEST
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TABLE 1A

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Sequence 319	AA962622	dbEST	Sequence 371	AF051894	ANUC
Sequence 320	AA991285	dbEST	Sequence 372	AF052124	ANUC
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Sequence 356	AF028832	ANUC	Sequence 408	AF124439	ANUC
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Sequence 358	AF030514	ANUC	Sequence 410	AF131820	ANUC
Sequence 359	AF031469	ANUC	Sequence 411	AF131848	ANUC
Sequence 360	AF033095	ANUC	Sequence 412	AF132966	ANUC
Sequence 361	AF035286	ANUC	Sequence 413	AF132968	ANUC
Sequence 362	AF035316	ANUC	Sequence 414	AF146277	ANUC
Sequence 363	AF037204	ANUC	Sequence 415	AF147331	ANUC

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Sequence 416	AF150100	ANUC	Sequence 468	AI417973	dbEST
Sequence 417	AF150266	dbEST	Sequence 469	AI431963	dbEST
Sequence 418	AF151873	ANUC	Sequence 470	AI453405	dbEST
Sequence 419	AF151877	ANUC	Sequence 471	AI457157	dbEST
Sequence 420	AF151978	ANUC	Sequence 472	AI457624	dbEST
Sequence 421	AF167160	ANUC	Sequence 473	AI459679	dbEST
Sequence 422	AI023413	dbEST	Sequence 474	AI460010	dbEST
Sequence 423	AI027888	dbEST	Sequence 475	AI469095	dbEST
Sequence 424	AI031811	dbEST	Sequence 476	AI469715	dbEST
Sequence 425	AI033687	dbEST	Sequence 477	AI471539	dbEST
Sequence 426	AI042140	dbEST	Sequence 478	AI476335	dbEST
Sequence 427	AI075324	dbEST	Sequence 479	AI479289	dbEST
Sequence 428	AI075876	dbEST	Sequence 480	AI499285	dbEST
Sequence 429	AI126802	dbEST	Sequence 481	AI521180	dbEST
Sequence 430	AI127556	dbEST	Sequence 482	AI538061	dbEST
Sequence 431	AI129360	dbEST	Sequence 483	AI567204	dbEST
Sequence 432	AI139456	dbEST	Sequence 484	AI587104	dbEST
Sequence 433	AI140291	dbEST	Sequence 485	AI587328	dbEST
Sequence 434	AI144215	dbEST	Sequence 486	AI609624	dbEST
Sequence 435	AI161378	dbEST	Sequence 487	AI610607	dbEST
Sequence 436	AI188638	dbEST	Sequence 488	AI612873	dbEST
Sequence 437	AI215617	dbEST	Sequence 489	AI627444	dbEST
Sequence 438	AI216969	dbEST	Sequence 490	AI632869	dbEST
Sequence 439	AI241578	dbEST	Sequence 491	AI633164	dbEST
Sequence 440	AI250167	dbEST	Sequence 492	AI636014	dbEST
Sequence 441	AI253330	dbEST	Sequence 493	AI637620	dbEST
Sequence 442	AI253335	dbEST	Sequence 494	AI676218	dbEST
Sequence 443	AI253369	dbEST	Sequence 495	AI683871	dbEST
Sequence 444	AI253436	dbEST	Sequence 496	AI684170	dbEST
Sequence 445	AI261671	dbEST	Sequence 497	AI693877	dbEST
Sequence 446	AI262264	dbEST	Sequence 498	AI694088	dbEST
Sequence 447	AI267162	dbEST	Sequence 499	AI732534	dbEST
Sequence 448	AI267379	dbEST	Sequence 500	AI743595	dbEST
Sequence 449	AI267502	dbEST	Sequence 501	AI744489	dbEST
Sequence 450	AI267622	dbEST	Sequence 502	AI745058	dbEST
Sequence 451	AI279131	dbEST	Sequence 503	AI753108	dbEST
Sequence 452	AI285943	dbEST	Sequence 504	AI791322	dbEST
Sequence 453	AI289173	dbEST	Sequence 505	AI798474	dbEST
Sequence 454	AI290876	dbEST	Sequence 506	AI803838	dbEST
Sequence 455	AI292104	dbEST	Sequence 507	AI811960	dbEST
Sequence 456	AI300033	dbEST	Sequence 508	AI813617	dbEST
Sequence 457	AI300074	dbEST	Sequence 509	AI815829	dbEST
Sequence 458	AI312113	dbEST	Sequence 510	AI826957	dbEST
Sequence 459	AI336032	dbEST	Sequence 511	AI831002	dbEST
Sequence 460	AI337069	dbEST	Sequence 512	AI863041	dbEST
Sequence 461	AI340262	dbEST	Sequence 513	AI867294	dbEST
Sequence 462	AI346975	dbEST	Sequence 514	AI912076	dbEST
Sequence 463	AI354639	dbEST	Sequence 515	AI915553	dbEST
Sequence 464	AI366381	dbEST	Sequence 516	AJ001381	ANUC
Sequence 465	AI369024	dbEST	Sequence 517	AJ003401	dbEST
Sequence 466	AI382020	dbEST	Sequence 518	AJ010071	ANUC
Sequence 467	AI400372	dbEST	Sequence 519	AJ132502	ANUC

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Sequence 520	AL044356	dbEST	Sequence 572	E01197	ANUC
Sequence 521	AL044825	dbEST	Sequence 573	E01198	ANUC
Sequence 522	AL047024	dbEST	Sequence 574	E01630	ANUC
Sequence 523	AL048393	dbEST	Sequence 575	E01954	ANUC
Sequence 524	AL049313	ANUC	Sequence 576	E01971	ANUC
Sequence 525	AL049923	ANUC	Sequence 577	E01972	ANUC
Sequence 526	AL049954	ANUC	Sequence 578	E02628	ANUC
Sequence 527	AL050024	ANUC	Sequence 579	E03569	ANUC
Sequence 528	AL050272	ANUC	Sequence 580	E03879	ANUC
Sequence 529	AL050395	ANUC	Sequence 581	E08663	ANUC
Sequence 530	AL096714	ANUC	Sequence 582	F06593	dbEST
Sequence 531	AL096748	ANUC	Sequence 583	F28779	dbEST
Sequence 532	AL096842	ANUC	Sequence 584	H25806	dbEST
Sequence 533	AL110124	ANUC	Sequence 585	H47546	dbEST
Sequence 534	C17346	dbEST	Sequence 586	H48873	dbEST
Sequence 535	D00017	ANUC	Sequence 587	H66467	dbEST
Sequence 536	D00068	ANUC	Sequence 588	H88415	dbEST
Sequence 537	D11960	dbEST	Sequence 589	J00196	ANUC
Sequence 538	D12502	ANUC	Sequence 590	J03575	ANUC
Sequence 539	D12763	ANUC	Sequence 591	J03858	ANUC
Sequence 540	D13380	ANUC	Sequence 592	J03909	ANUC
Sequence 541	D13645	ANUC	Sequence 593	J04164	ANUC
Sequence 542	D13866	ANUC	Sequence 594	K00422	ANUC
Sequence 543	D14697	ANUC	Sequence 595	K01763	ANUC
Sequence 544	D21260	ANUC	Sequence 596	L00693	ANUC
Sequence 545	D23660	ANUC	Sequence 597	L02426	ANUC
Sequence 546	D26155	ANUC	Sequence 598	L06328	ANUC
Sequence 547	D26599	ANUC	Sequence 599	L09159	ANUC
Sequence 548	D28759	ANUC	Sequence 600	L10413	ANUC
Sequence 549	D29640	ANUC	Sequence 601	L11066	ANUC
Sequence 550	D31763	ANUC	Sequence 602	L20688	ANUC
Sequence 551	D31767	ANUC	Sequence 603	L20941	ANUC
Sequence 552	D31883	ANUC	Sequence 604	L28997	ANUC
Sequence 553	D38524	ANUC	Sequence 605	L38995	ANUC
Sequence 554	D42040	ANUC	Sequence 606	L41490	ANUC
Sequence 555	D45248	ANUC	Sequence 607	M10119	ANUC
Sequence 556	D49396	ANUC	Sequence 608	M13536	ANUC
Sequence 557	D50372	ANUC	Sequence 609	M14328	ANUC
Sequence 558	D50420	ANUC	Sequence 610	M14764	ANUC
Sequence 559	D55653	ANUC	Sequence 611	M15329	ANUC
Sequence 560	D81522	dbEST	Sequence 612	M16660	ANUC
Sequence 561	D83077	ANUC	Sequence 613	M17017	ANUC
Sequence 562	D83767	ANUC	Sequence 614	M18216	ANUC
Sequence 563	D86958	ANUC	Sequence 615	M19723	ANUC
Sequence 564	D86979	ANUC	Sequence 616	M22918	ANUC
Sequence 565	D87666	ANUC	Sequence 617	M23613	ANUC
Sequence 566	D87667	ANUC	Sequence 618	M24194	ANUC
Sequence 567	D87735	ANUC	Sequence 619	M24594	ANUC
Sequence 568	D88532	ANUC	Sequence 620	M26152	ANUC
Sequence 569	D89053	ANUC	Sequence 621	M29540	ANUC
Sequence 570	D90311	ANUC	Sequence 622	M29541	ANUC
Sequence 571	D90453	ANUC	Sequence 623	M29551	ANUC

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Sequence 624	M33146	ANUC	Sequence 676	U07550	ANUC
Sequence 625	M34064	ANUC	Sequence 677	U07857	ANUC
Sequence 626	M34455	ANUC	Sequence 678	U08815	ANUC
Sequence 627	M35198	ANUC	Sequence 679	U09559	ANUC
Sequence 628	M36693	ANUC	Sequence 680	U09847	ANUC
Sequence 629	M37716	ANUC	Sequence 681	U10439	ANUC
Sequence 630	M55268	ANUC	Sequence 682	U14966	ANUC
Sequence 631	M55542	ANUC	Sequence 683	U18321	ANUC
Sequence 632	M55543	ANUC	Sequence 684	U19878	ANUC
Sequence 633	M57567	ANUC	Sequence 685	U23942	ANUC
Sequence 634	M60333	ANUC	Sequence 686	U25789	ANUC
Sequence 635	M61715	ANUC	Sequence 687	U28249	ANUC
Sequence 636	M62831	ANUC	Sequence 688	U28964	ANUC
Sequence 637	M63121	ANUC	Sequence 689	U32500	ANUC
Sequence 638	M63838	ANUC	Sequence 690	U32944	ANUC
Sequence 639	M68520	ANUC	Sequence 691	U33760	ANUC
Sequence 640	M77945	dbEST	Sequence 692	U37230	ANUC
Sequence 641	M80563	ANUC	Sequence 693	U37518	ANUC
Sequence 642	M81757	ANUC	Sequence 694	U38292	ANUC
Sequence 643	M83248	ANUC	Sequence 695	U38784	ANUC
Sequence 644	M83654	ANUC	Sequence 696	U41371	ANUC
Sequence 645	M86553	ANUC	Sequence 697	U41515	ANUC
Sequence 646	M87284	ANUC	Sequence 698	U52513	ANUC
Sequence 647	M87434	ANUC	Sequence 699	U56255	ANUC
Sequence 648	M87503	ANUC	Sequence 700	U57847	ANUC
Sequence 649	M92357	ANUC	Sequence 701	U61083	ANUC
Sequence 650	M96982	ANUC	Sequence 702	U68758	ANUC
Sequence 651	M97501	ANUC	Sequence 703	U73524	ANUC
Sequence 652	M97935	ANUC	Sequence 704	U77085	ANUC
Sequence 653	N36346	dbEST	Sequence 705	U78722	ANUC
Sequence 654	N51262	dbEST	Sequence 706	U79751	ANUC
Sequence 655	N57413	dbEST	Sequence 707	U94586	ANUC
Sequence 656	N78477	dbEST	Sequence 708	V00572	ANUC
Sequence 657	N92060	dbEST	Sequence 709	V00594	ANUC
Sequence 658	Q21065	NUCPATENT	Sequence 710	V04202	NUCPATENT
Sequence 659	Q94780	NUCPATENT	Sequence 711	V17906	NUCPATENT
Sequence 660	R13925	dbEST	Sequence 712	V36078	NUCPATENT
Sequence 661	R51732	dbEST	Sequence 713	V68140	NUCPATENT
Sequence 662	R56461	dbEST	Sequence 714	V86134	NUCPATENT
Sequence 663	R66489	dbEST	Sequence 715	W02908	dbEST
Sequence 664	R75621	dbEST	Sequence 716	W05711	dbEST
Sequence 665	S45630	ANUC	Sequence 717	W07308	dbEST
Sequence 666	S70290	ANUC	Sequence 718	W25547	dbEST
Sequence 667	S75295	ANUC	Sequence 719	W28837	dbEST
Sequence 668	S76638	ANUC	Sequence 720	W37272	dbEST
Sequence 669	T34641	dbEST	Sequence 721	W38644	dbEST
Sequence 670	T50925	NUCPATENT	Sequence 722	W39262	dbEST
Sequence 671	T52715	dbEST	Sequence 723	W39498	dbEST
Sequence 672	T54951	dbEST	Sequence 724	W52254	dbEST
Sequence 673	T70793	dbEST	Sequence 725	W74319	dbEST
Sequence 674	U03886	ANUC	Sequence 726	W77987	dbEST
Sequence 675	U04313	ANUC	Sequence 727	W80480	dbEST

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Sequence 728	X00637	ANUC	Sequence 780	AA028164	dbEST
Sequence 729	X01742	ANUC	Sequence 781	AA035775	dbEST
Sequence 730	X02530	ANUC	Sequence 782	AA037294	dbEST
Sequence 731	X02661	ANUC	Sequence 783	AA039967	dbEST
Sequence 732	X04316	NUCPATENT	Sequence 784	AA045637	dbEST
Sequence 733	X04371	ANUC	Sequence 785	AA046815	dbEST
Sequence 734	X04470	ANUC	Sequence 786	AA046853	dbEST
Sequence 735	X05908	ANUC	Sequence 787	AA047052	dbEST
Sequence 736	X07819	ANUC	Sequence 788	AA047213	dbEST
Sequence 737	X13238	ANUC	Sequence 789	AA057071	dbEST
Sequence 738	X15674	ANUC	Sequence 790	AA058933	dbEST
Sequence 739	X15729	ANUC	Sequence 791	AA064952	dbEST
Sequence 740	X16354	ANUC	Sequence 792	AA075089	dbEST
Sequence 741	X16356	ANUC	Sequence 793	AA076291	dbEST
Sequence 742	X16455	ANUC	Sequence 794	AA078508	dbEST
Sequence 743	X17025	ANUC	Sequence 795	AA080864	dbEST
Sequence 744	X20432	NUCPATENT	Sequence 796	AA083345	dbEST
Sequence 745	X30167	NUCPATENT	Sequence 797	AA083693	dbEST
Sequence 746	X33937	NUCPATENT	Sequence 798	AA085497	dbEST
Sequence 747	X35726	NUCPATENT	Sequence 799	AA086463	dbEST
Sequence 748	X41105	NUCPATENT	Sequence 800	AA093935	dbEST
Sequence 749	X51841	ANUC	Sequence 801	AA100291	dbEST
Sequence 750	X54941	ANUC	Sequence 802	AA101207	dbEST
Sequence 751	X56932	ANUC	Sequence 803	AA102403	dbEST
Sequence 752	X57351	ANUC	Sequence 804	AA111856	dbEST
Sequence 753	X59710	ANUC	Sequence 805	AA115174	dbEST
Sequence 754	X65614	ANUC	Sequence 806	AA122134	dbEST
Sequence 755	X67951	ANUC	Sequence 807	AA122291	dbEST
Sequence 756	X68060	ANUC	Sequence 808	AA125780	dbEST
Sequence 757	X68277	ANUC	Sequence 809	AA127322	dbEST
Sequence 758	X72790	ANUC	Sequence 810	AA130432	dbEST
Sequence 759	X76488	ANUC	Sequence 811	AA131801	dbEST
Sequence 760	X83544	ANUC	Sequence 812	AA132445	dbEST
Sequence 761	X85134	ANUC	Sequence 813	AA134109	dbEST
Sequence 762	X87949	ANUC	Sequence 814	AA135924	dbEST
Sequence 763	X93036	ANUC	Sequence 815	AA136322	dbEST
Sequence 764	X99699	ANUC	Sequence 816	AA143034	dbEST
Sequence 765	X99920	ANUC	Sequence 817	AA150057	dbEST
Sequence 766	Y09267	ANUC	Sequence 818	AA151651	dbEST
Sequence 767	Y13323	ANUC	Sequence 819	AA156335	dbEST
Sequence 768	Y17392	ANUC	Sequence 820	AA157333	dbEST
Sequence 769	Z12830	ANUC	Sequence 821	AA158987	dbEST
Sequence 770	Z36815	ANUC	Sequence 822	AA165439	dbEST
Sequence 771	Z47087	ANUC	Sequence 823	AA165632	dbEST
Sequence 772	Z48570	ANUC	Sequence 824	AA166618	dbEST
Sequence 773	Z71389	ANUC	Sequence 825	AA172067	dbEST
Sequence 774	AA002223	dbEST	Sequence 826	AA173031	dbEST
Sequence 775	AA018843	dbEST	Sequence 827	AA178870	dbEST
Sequence 776	AA021647	dbEST	Sequence 828	AA181874	dbEST
Sequence 777	AA022842	dbEST	Sequence 829	AA195194	dbEST
Sequence 778	AA022965	dbEST	Sequence 830	AA203206	dbEST
Sequence 779	AA024522	dbEST	Sequence 831	AA203289	dbEST

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Sequence 832	AA204768	dbEST
Sequence 833	AA206621	dbEST
Sequence 834	AA213914	dbEST
Sequence 835	AA218919	dbEST
Sequence 836	AA224050	dbEST
Sequence 837	AA224244	dbEST
Sequence 838	AA227596	dbEST
Sequence 839	AA229018	dbEST
Sequence 840	AA229161	dbEST
Sequence 841	AA236445	dbEST
Sequence 842	AA236680	dbEST
Sequence 843	AA243537	dbEST
Sequence 844	AA252436	dbEST
Sequence 845	AA252869	dbEST
Sequence 846	AA256330	dbEST
Sequence 847	AA262700	dbEST
Sequence 848	AA278358	dbEST
Sequence 849	AA287076	dbEST
Sequence 850	AA291551	dbEST
Sequence 851	AA293273	dbEST
Sequence 852	AA295982	dbEST
Sequence 853	AA301675	dbEST
Sequence 854	AA301722	dbEST
Sequence 855	AA302964	dbEST
Sequence 856	AA303199	dbEST
Sequence 857	AA304927	dbEST
Sequence 858	AA305042	dbEST
Sequence 859	AA305635	dbEST
Sequence 860	AA315030	dbEST
Sequence 861	AA315943	dbEST
Sequence 862	AA317144	dbEST
Sequence 863	AA326060	dbEST
Sequence 864	AA327358	dbEST
Sequence 865	AA336387	dbEST
Sequence 866	AA346413	dbEST
Sequence 867	AA352580	dbEST
Sequence 868	AA363162	dbEST
Sequence 869	AA375754	dbEST
Sequence 870	AA399230	dbEST
Sequence 871	AA400249	dbEST
Sequence 872	AA401629	dbEST
Sequence 873	AA402885	dbEST
Sequence 874	AA406401	dbEST
Sequence 875	AA421682	dbEST
Sequence 876	AA422057	dbEST
Sequence 877	AA424445	dbEST
Sequence 878	AA424901	dbEST
Sequence 879	AA424984	dbEST
Sequence 880	AA425182	dbEST
Sequence 881	AA428607	dbEST
Sequence 882	AA446099	dbEST
Sequence 883	AA446403	dbEST
Sequence 884	AA447735	dbEST
Sequence 885	AA449054	dbEST
Sequence 886	AA449205	dbEST
Sequence 887	AA449520	dbEST
Sequence 888	AA452273	dbEST
Sequence 889	AA455007	dbEST
Sequence 890	AA455104	dbEST
Sequence 891	AA459527	dbEST
Sequence 892	AA460226	dbEST
Sequence 893	AA461287	dbEST
Sequence 894	AA464526	dbEST
Sequence 895	AA468398	dbEST
Sequence 896	AA469135	dbEST
Sequence 897	AA469453	dbEST
Sequence 898	AA470690	dbEST
Sequence 899	AA479427	dbEST
Sequence 900	AA480336	dbEST
Sequence 901	AA483454	dbEST
Sequence 902	AA487669	dbEST
Sequence 903	AA488423	dbEST
Sequence 904	AA488635	dbEST
Sequence 905	AA488843	dbEST
Sequence 906	AA489772	dbEST
Sequence 907	AA503972	dbEST
Sequence 908	AA508506	dbEST
Sequence 909	AA513550	dbEST
Sequence 910	AA513783	dbEST
Sequence 911	AA514989	dbEST
Sequence 912	AA516400	dbEST
Sequence 913	AA520993	dbEST
Sequence 914	AA521110	dbEST
Sequence 915	AA523639	dbEST
Sequence 916	AA523697	dbEST
Sequence 917	AA528106	dbEST
Sequence 918	AA528190	dbEST
Sequence 919	AA528226	dbEST
Sequence 920	AA534830	dbEST
Sequence 921	AA548722	dbEST
Sequence 922	AA551236	dbEST
Sequence 923	AA551243	dbEST
Sequence 924	AA558778	dbEST
Sequence 925	AA563834	dbEST
Sequence 926	AA576432	dbEST
Sequence 927	AA580069	dbEST
Sequence 928	AA580294	dbEST
Sequence 929	AA582588	dbEST
Sequence 930	AA584304	dbEST
Sequence 931	AA588772	dbEST
Sequence 932	AA593075	dbEST
Sequence 933	AA595585	dbEST
Sequence 934	AA601895	dbEST
Sequence 935	AA628700	dbEST

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Sequence 936	AA630326	dbEST	Sequence 988	AA902644	dbEST
Sequence 937	AA630642	dbEST	Sequence 989	AA909144	dbEST
Sequence 938	AA631178	dbEST	Sequence 990	AA913281	dbEST
Sequence 939	AA631218	dbEST	Sequence 991	AA916756	dbEST
Sequence 940	AA633550	dbEST	Sequence 992	AA922420	dbEST
Sequence 941	AA634808	dbEST	Sequence 993	AA927283	dbEST
Sequence 942	AA639199	dbEST	Sequence 994	AA933075	dbEST
Sequence 943	AA639791	dbEST	Sequence 995	AA935979	dbEST
Sequence 944	AA644273	dbEST	Sequence 996	AA937947	dbEST
Sequence 945	AA648897	dbEST	Sequence 997	AA948295	dbEST
Sequence 946	AA664732	dbEST	Sequence 998	AA969131	dbEST
Sequence 947	AA677550	dbEST	Sequence 999	AA971881	dbEST
Sequence 948	AA687308	dbEST	Sequence 1000	AA973019	dbEST
Sequence 949	AA705002	dbEST	Sequence 1001	AA988923	dbEST
Sequence 950	AA706685	dbEST	Sequence 1002	AA989465	dbEST
Sequence 951	AA708266	dbEST	Sequence 1003	AA994023	dbEST
Sequence 952	AA713687	dbEST	Sequence 1004	AB002310	ANUC
Sequence 953	AA719618	dbEST	Sequence 1005	AB002330	ANUC
Sequence 954	AA719674	dbEST	Sequence 1006	AB007944	ANUC
Sequence 955	AA720572	dbEST	Sequence 1007	AB012911	ANUC
Sequence 956	AA721752	dbEST	Sequence 1008	AB017019	ANUC
Sequence 957	AA723612	dbEST	Sequence 1009	AB018266	ANUC
Sequence 958	AA730571	dbEST	Sequence 1010	AB018305	ANUC
Sequence 959	AA742282	dbEST	Sequence 1011	AB018347	ANUC
Sequence 960	AA748437	dbEST	Sequence 1012	AB019568	ANUC
Sequence 961	AA749187	dbEST	Sequence 1013	AB023158	ANUC
Sequence 962	AA761602	dbEST	Sequence 1014	AB028976	ANUC
Sequence 963	AA768355	dbEST	Sequence 1015	AB029005	ANUC
Sequence 964	AA769127	dbEST	Sequence 1016	AC28164	PREPATNUC
Sequence 965	AA774030	dbEST	Sequence 1017	AD001528	ANUC
Sequence 966	AA774247	dbEST	Sequence 1018	AF000231	ANUC
Sequence 967	AA779631	dbEST	Sequence 1019	AF006088	ANUC
Sequence 968	AA808747	dbEST	Sequence 1020	AF006516	ANUC
Sequence 969	AA809854	dbEST	Sequence 1021	AF012072	ANUC
Sequence 970	AA810859	dbEST	Sequence 1022	AF026947	ANUC
Sequence 971	AA825673	dbEST	Sequence 1023	AF028832	ANUC
Sequence 972	AA825768	dbEST	Sequence 1024	AF030424	ANUC
Sequence 973	AA826517	dbEST	Sequence 1025	AF031379	ANUC
Sequence 974	AA827331	dbEST	Sequence 1026	AF035287	ANUC
Sequence 975	AA827764	dbEST	Sequence 1027	AF035309	ANUC
Sequence 976	AA829511	dbEST	Sequence 1028	AF038197	ANUC
Sequence 977	AA831603	dbEST	Sequence 1029	AF038404	ANUC
Sequence 978	AA836991	dbEST	Sequence 1030	AF043431	ANUC
Sequence 979	AA837254	dbEST	Sequence 1031	AF044670	ANUC
Sequence 980	AA846480	dbEST	Sequence 1032	AF044958	ANUC
Sequence 981	AA846840	dbEST	Sequence 1033	AF047184	ANUC
Sequence 982	AA853515	dbEST	Sequence 1034	AF052164	ANUC
Sequence 983	AA883212	dbEST	Sequence 1035	AF052496	dbEST
Sequence 984	AA886885	dbEST	Sequence 1036	AF052578	ANUC
Sequence 985	AA889485	dbEST	Sequence 1037	AF054990	ANUC
Sequence 986	AA897461	dbEST	Sequence 1038	AF059524	ANUC
Sequence 987	AA902582	dbEST	Sequence 1039	AF070561	ANUC

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Sequence 1040	AF070626	ANUC	Sequence 1092	AI373032	dbEST
Sequence 1041	AF070655	ANUC	Sequence 1093	AI374954	dbEST
Sequence 1042	AF070674	ANUC	Sequence 1094	AI380539	dbEST
Sequence 1043	AF075040	ANUC	Sequence 1095	AI417583	dbEST
Sequence 1044	AF077030	ANUC	Sequence 1096	AI432644	dbEST
Sequence 1045	AF078847	ANUC	Sequence 1097	AI433157	dbEST
Sequence 1046	AF080246	ANUC	Sequence 1098	AI457792	dbEST
Sequence 1047	AF081282	ANUC	Sequence 1099	AI469112	dbEST
Sequence 1048	AF081484	ANUC	Sequence 1100	AI471114	dbEST
Sequence 1049	AF084523	ANUC	Sequence 1101	AI471534	dbEST
Sequence 1050	AF086163	ANUC	Sequence 1102	AI473927	dbEST
Sequence 1051	AF095791	ANUC	Sequence 1103	AI479305	dbEST
Sequence 1052	AF100756	ANUC	Sequence 1104	AI499243	dbEST
Sequence 1053	AF107406	ANUC	Sequence 1105	AI525796	dbEST
Sequence 1054	AF119297	ANUC	Sequence 1106	AI525843	dbEST
Sequence 1055	AF131858	ANUC	Sequence 1107	AI537677	dbEST
Sequence 1056	AF132940	ANUC	Sequence 1108	AI541029	dbEST
Sequence 1057	AF151857	ANUC	Sequence 1109	AI560129	dbEST
Sequence 1058	AI028733	dbEST	Sequence 1110	AI583108	dbEST
Sequence 1059	AI031901	dbEST	Sequence 1111	AI584068	dbEST
Sequence 1060	AI033739	dbEST	Sequence 1112	AI587208	dbEST
Sequence 1061	AI040324	dbEST	Sequence 1113	AI589867	dbEST
Sequence 1062	AI051172	dbEST	Sequence 1114	AI610676	dbEST
Sequence 1063	AI076805	dbEST	Sequence 1115	AI630362	dbEST
Sequence 1064	AI087005	dbEST	Sequence 1116	AI633006	dbEST
Sequence 1065	AI089913	dbEST	Sequence 1117	AI634443	dbEST
Sequence 1066	AI092007	dbEST	Sequence 1118	AI635096	dbEST
Sequence 1067	AI127326	dbEST	Sequence 1119	AI682105	dbEST
Sequence 1068	AI147251	dbEST	Sequence 1120	AI683338	dbEST
Sequence 1069	AI148933	dbEST	Sequence 1121	AI684800	dbEST
Sequence 1070	AI149846	dbEST	Sequence 1122	AI684991	dbEST
Sequence 1071	AI167855	dbEST	Sequence 1123	AI689369	dbEST
Sequence 1072	AI183965	dbEST	Sequence 1124	AI689617	dbEST
Sequence 1073	AI189258	dbEST	Sequence 1125	AI689883	dbEST
Sequence 1074	AI220148	dbEST	Sequence 1126	AI693745	dbEST
Sequence 1075	AI224374	dbEST	Sequence 1127	AI701001	dbEST
Sequence 1076	AI240095	dbEST	Sequence 1128	AI733038	dbEST
Sequence 1077	AI246677	dbEST	Sequence 1129	AI735638	dbEST
Sequence 1078	AI248538	dbEST	Sequence 1130	AI741506	dbEST
Sequence 1079	AI266582	dbEST	Sequence 1131	AI742722	dbEST
Sequence 1080	AI268864	dbEST	Sequence 1132	AI742738	dbEST
Sequence 1081	AI270183	dbEST	Sequence 1133	AI743552	dbEST
Sequence 1082	AI271795	dbEST	Sequence 1134	AI753784	dbEST
Sequence 1083	AI273008	dbEST	Sequence 1135	AI754296	dbEST
Sequence 1084	AI273841	dbEST	Sequence 1136	AI754652	dbEST
Sequence 1085	AI274756	dbEST	Sequence 1137	AI754732	dbEST
Sequence 1086	AI275528	dbEST	Sequence 1138	AI765975	dbEST
Sequence 1087	AI283096	dbEST	Sequence 1139	AI769970	dbEST
Sequence 1088	AI298059	dbEST	Sequence 1140	AI819225	dbEST
Sequence 1089	AI335653	dbEST	Sequence 1141	AI820563	dbEST
Sequence 1090	AI338977	dbEST	Sequence 1142	AI827818	dbEST
Sequence 1091	AI339946	dbEST	Sequence 1143	AI828682	dbEST

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Sequence 1144	AI830067	dbEST
Sequence 1145	AI861989	dbEST
Sequence 1146	AI887129	dbEST
Sequence 1147	AI887632	dbEST
Sequence 1148	AI890281	dbEST
Sequence 1149	AI924046	dbEST
Sequence 1150	AI924096	dbEST
Sequence 1151	AI924823	dbEST
Sequence 1152	AI963471	dbEST
Sequence 1153	AI963604	dbEST
Sequence 1154	AI972556	dbEST
Sequence 1155	AI979048	dbEST
Sequence 1156	AI984656	dbEST
Sequence 1157	AJ010442	ANUC
Sequence 1158	AJ132694	ANUC
Sequence 1159	AJ224442	ANUC
Sequence 1160	AL036299	dbEST
Sequence 1161	AL042979	dbEST
Sequence 1162	AL047305	dbEST
Sequence 1163	AL049247	ANUC
Sequence 1164	AL049313	ANUC
Sequence 1165	AL049381	ANUC
Sequence 1166	AL049932	ANUC
Sequence 1167	AL050041	ANUC
Sequence 1168	AL050161	ANUC
Sequence 1169	AL050265	ANUC
Sequence 1170	AL050268	ANUC
Sequence 1171	AL050367	ANUC
Sequence 1172	AL079286	ANUC
Sequence 1173	AL079312	ANUC
Sequence 1174	AL079314	ANUC
Sequence 1175	AL080113	ANUC
Sequence 1176	AL110164	ANUC
Sequence 1177	AL117412	ANUC
Sequence 1178	AL117612	ANUC
Sequence 1179	AL119009	dbEST
Sequence 1180	AW014693	dbEST
Sequence 1181	AW014985	dbEST
Sequence 1182	AW021794	dbEST
Sequence 1183	C01521	dbEST
Sequence 1184	D01096	ANUC
Sequence 1185	D13119	ANUC
Sequence 1186	D13627	ANUC
Sequence 1187	D13630	ANUC
Sequence 1188	D13639	ANUC
Sequence 1189	D13665	ANUC
Sequence 1190	D14530	ANUC
Sequence 1191	D21260	ANUC
Sequence 1192	D25278	ANUC
Sequence 1193	D26361	ANUC
Sequence 1194	D30655	ANUC
Sequence 1195	D50310	ANUC
Sequence 1196	D51497	dbEST
Sequence 1197	D53031	dbEST
Sequence 1198	D62116	dbEST
Sequence 1199	D63878	ANUC
Sequence 1200	D78611	ANUC
Sequence 1201	D82348	ANUC
Sequence 1202	D83032	ANUC
Sequence 1203	D85433	ANUC
Sequence 1204	D87437	ANUC
Sequence 1205	D87667	ANUC
Sequence 1206	D89092	ANUC
Sequence 1207	D90041	ANUC
Sequence 1208	E02628	ANUC
Sequence 1209	E05732	ANUC
Sequence 1210	F00551	dbEST
Sequence 1211	H08920	dbEST
Sequence 1212	H25080	dbEST
Sequence 1213	H30306	dbEST
Sequence 1214	H44647	dbEST
Sequence 1215	H81376	dbEST
Sequence 1216	H93521	dbEST
Sequence 1217	H94496	dbEST
Sequence 1218	J03464	ANUC
Sequence 1219	J03799	ANUC
Sequence 1220	J04027	ANUC
Sequence 1221	J04177	ANUC
Sequence 1222	K01228	ANUC
Sequence 1223	K01566	ANUC
Sequence 1224	L07395	ANUC
Sequence 1225	L09159	ANUC
Sequence 1226	L11315	ANUC
Sequence 1227	L13806	ANUC
Sequence 1228	L15702	ANUC
Sequence 1229	L16510	ANUC
Sequence 1230	L24804	ANUC
Sequence 1231	L25931	ANUC
Sequence 1232	L28809	ANUC
Sequence 1233	M10036	ANUC
Sequence 1234	M10905	ANUC
Sequence 1235	M11353	ANUC
Sequence 1236	M12267	ANUC
Sequence 1237	M13536	ANUC
Sequence 1238	M14483	ANUC
Sequence 1239	M14630	ANUC
Sequence 1240	M17885	ANUC
Sequence 1241	M18366	ANUC
Sequence 1242	M21575	ANUC
Sequence 1243	M23254	ANUC
Sequence 1244	M24194	ANUC
Sequence 1245	M24486	ANUC
Sequence 1246	M26512	ANUC
Sequence 1247	M28372	ANUC

TABLE 1A

Sequence 1248	M31159	ANUC
Sequence 1249	M32220	ANUC
Sequence 1250	M36341	ANUC
Sequence 1251	M36693	ANUC
Sequence 1252	M38690	ANUC
Sequence 1253	M58485	ANUC
Sequence 1254	M59849	ANUC
Sequence 1255	M62831	ANUC
Sequence 1256	M64241	ANUC
Sequence 1257	M69043	ANUC
Sequence 1258	M77142	ANUC
Sequence 1259	M77830	ANUC
Sequence 1260	M86667	ANUC
Sequence 1261	M88108	ANUC
Sequence 1262	M93651	ANUC
Sequence 1263	M95542	ANUC
Sequence 1264	N43970	dbEST
Sequence 1265	Q12759	NUCPATENT
Sequence 1266	Q14635	NUCPATENT
Sequence 1267	R11045	dbEST
Sequence 1268	R76376	dbEST
Sequence 1269	R84450	dbEST
Sequence 1270	S74728	ANUC
Sequence 1271	S82081	ANUC
Sequence 1272	T07459	dbEST
Sequence 1273	T19883	NUCPATENT
Sequence 1274	T21168	NUCPATENT
Sequence 1275	T22605	NUCPATENT
Sequence 1276	T37405	NUCPATENT
Sequence 1277	T67129	dbEST
Sequence 1278	T69703	dbEST
Sequence 1279	T78615	dbEST
Sequence 1280	T89937	dbEST
Sequence 1281	U03851	ANUC
Sequence 1282	U12404	ANUC
Sequence 1283	U14967	ANUC
Sequence 1284	U14971	ANUC
Sequence 1285	U20659	ANUC
Sequence 1286	U25789	ANUC
Sequence 1287	U30825	ANUC
Sequence 1288	U47077	ANUC
Sequence 1289	U49844	ANUC
Sequence 1290	U63846	ANUC
Sequence 1291	U65928	ANUC
Sequence 1292	U72516	ANUC
Sequence 1293	U79282	ANUC
Sequence 1294	U90716	ANUC
Sequence 1295	U90904	ANUC
Sequence 1296	U94364	ANUC
Sequence 1297	V20437	NUCPATENT
Sequence 1298	V24305	NUCPATENT
Sequence 1299	V81394	NUCPATENT
Sequence 1300	V84510	NUCPATENT
Sequence 1301	W19427	dbEST
Sequence 1302	W65357	dbEST
Sequence 1303	W75963	dbEST
Sequence 1304	W80525	dbEST
Sequence 1305	X01630	ANUC
Sequence 1306	X04098	ANUC
Sequence 1307	X04408	ANUC
Sequence 1308	X06700	ANUC
Sequence 1309	X14420	ANUC
Sequence 1310	X51742	NUCPATENT
Sequence 1311	X60111	ANUC
Sequence 1312	X69398	ANUC
Sequence 1313	X72755	ANUC
Sequence 1314	X74979	ANUC
Sequence 1315	X76180	ANUC
Sequence 1316	X78627	ANUC
Sequence 1317	X79067	ANUC
Sequence 1318	X80910	ANUC
Sequence 1319	X87949	ANUC
Sequence 1320	Y00052	ANUC
Sequence 1321	Y00062	ANUC
Sequence 1322	Y00282	ANUC
Sequence 1323	Y00503	ANUC
Sequence 1324	Y15286	ANUC
Sequence 1325	Y17171	ANUC
Sequence 1326	Z13009	ANUC
Sequence 1327	Z24724	ANUC
Sequence 1328	Z29083	ANUC
Sequence 1329	Z29331	ANUC
Sequence 1330	Z46606	ANUC
Sequence 1331	Z48501	ANUC
Sequence 1332	AA001460	dbEST
Sequence 1333	AA001543	dbEST
Sequence 1334	AA001792	dbEST
Sequence 1335	AA004925	dbEST
Sequence 1336	AA010897	dbEST
Sequence 1337	AA017162	dbEST
Sequence 1338	AA019019	dbEST
Sequence 1339	AA022980	dbEST
Sequence 1340	AA024595	dbEST
Sequence 1341	AA024940	dbEST
Sequence 1342	AA024996	dbEST
Sequence 1343	AA025750	dbEST
Sequence 1344	AA026598	dbEST
Sequence 1345	AA029271	dbEST
Sequence 1346	AA029725	dbEST
Sequence 1347	AA029930	dbEST
Sequence 1348	AA033832	dbEST
Sequence 1349	AA035471	dbEST
Sequence 1350	AA035616	dbEST
Sequence 1351	AA036752	dbEST

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Sequence 1352	AA037377	dbEST	Sequence 1404	AA088693	dbEST
Sequence 1353	AA039778	dbEST	Sequence 1405	AA088783	dbEST
Sequence 1354	AA039948	dbEST	Sequence 1406	AA088829	dbEST
Sequence 1355	AA040688	dbEST	Sequence 1407	AA090106	dbEST
Sequence 1356	AA040820	dbEST	Sequence 1408	AA096032	dbEST
Sequence 1357	AA041259	dbEST	Sequence 1409	AA099819	dbEST
Sequence 1358	AA043477	dbEST	Sequence 1410	AA099923	dbEST
Sequence 1359	AA044209	dbEST	Sequence 1411	AA099976	dbEST
Sequence 1360	AA044233	dbEST	Sequence 1412	AA100764	dbEST
Sequence 1361	AA044791	dbEST	Sequence 1413	AA101010	dbEST
Sequence 1362	AA045054	dbEST	Sequence 1414	AA102013	dbEST
Sequence 1363	AA045147	dbEST	Sequence 1415	AA102564	dbEST
Sequence 1364	AA045768	dbEST	Sequence 1416	AA102830	dbEST
Sequence 1365	AA046848	dbEST	Sequence 1417	AA112186	dbEST
Sequence 1366	AA053021	dbEST	Sequence 1418	AA112645	dbEST
Sequence 1367	AA053316	dbEST	Sequence 1419	AA113305	dbEST
Sequence 1368	AA053919	dbEST	Sequence 1420	AA115218	dbEST
Sequence 1369	AA054069	dbEST	Sequence 1421	AA115315	dbEST
Sequence 1370	AA055479	dbEST	Sequence 1422	AA121656	dbEST
Sequence 1371	AA055591	dbEST	Sequence 1423	AA121718	dbEST
Sequence 1372	AA055637	dbEST	Sequence 1424	AA125809	dbEST
Sequence 1373	AA057243	dbEST	Sequence 1425	AA125939	dbEST
Sequence 1374	AA058712	dbEST	Sequence 1426	AA126452	dbEST
Sequence 1375	AA059128	dbEST	Sequence 1427	AA126718	dbEST
Sequence 1376	AA065169	dbEST	Sequence 1428	AA127436	dbEST
Sequence 1377	AA069850	dbEST	Sequence 1429	AA127666	dbEST
Sequence 1378	AA071167	dbEST	Sequence 1430	AA128063	dbEST
Sequence 1379	AA075158	dbEST	Sequence 1431	AA128636	dbEST
Sequence 1380	AA075515	dbEST	Sequence 1432	AA128641	dbEST
Sequence 1381	AA075663	dbEST	Sequence 1433	AA130778	dbEST
Sequence 1382	AA076397	dbEST	Sequence 1434	AA130982	dbEST
Sequence 1383	AA076421	dbEST	Sequence 1435	AA131827	dbEST
Sequence 1384	AA078387	dbEST	Sequence 1436	AA132056	dbEST
Sequence 1385	AA078570	dbEST	Sequence 1437	AA132163	dbEST
Sequence 1386	AA078872	dbEST	Sequence 1438	AA132574	dbEST
Sequence 1387	AA079480	dbEST	Sequence 1439	AA132992	dbEST
Sequence 1388	AA080889	dbEST	Sequence 1440	AA133351	dbEST
Sequence 1389	AA081073	dbEST	Sequence 1441	AA133474	dbEST
Sequence 1390	AA081608	dbEST	Sequence 1442	AA134460	dbEST
Sequence 1391	AA081834	dbEST	Sequence 1443	AA134527	dbEST
Sequence 1392	AA081917	dbEST	Sequence 1444	AA134589	dbEST
Sequence 1393	AA082258	dbEST	Sequence 1445	AA135696	dbEST
Sequence 1394	AA082441	dbEST	Sequence 1446	AA137017	dbEST
Sequence 1395	AA083270	dbEST	Sequence 1447	AA142941	dbEST
Sequence 1396	AA083345	dbEST	Sequence 1448	AA143001	dbEST
Sequence 1397	AA083522	dbEST	Sequence 1449	AA143074	dbEST
Sequence 1398	AA083573	dbEST	Sequence 1450	AA143746	dbEST
Sequence 1399	AA083638	dbEST	Sequence 1451	AA146900	dbEST
Sequence 1400	AA083774	dbEST	Sequence 1452	AA147200	dbEST
Sequence 1401	AA088318	dbEST	Sequence 1453	AA147247	dbEST
Sequence 1402	AA088344	dbEST	Sequence 1454	AA147781	dbEST
Sequence 1403	AA088351	dbEST	Sequence 1455	AA148027	dbEST

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Sequence 1456	AA148136	dbEST
Sequence 1457	AA149810	dbEST
Sequence 1458	AA150377	dbEST
Sequence 1459	AA150837	dbEST
Sequence 1460	AA150928	dbEST
Sequence 1461	AA151274	dbEST
Sequence 1462	AA151594	dbEST
Sequence 1463	AA151755	dbEST
Sequence 1464	AA152476	dbEST
Sequence 1465	AA155754	dbEST
Sequence 1466	AA156066	dbEST
Sequence 1467	AA157163	dbEST
Sequence 1468	AA157993	dbEST
Sequence 1469	AA158738	dbEST
Sequence 1470	AA159110	dbEST
Sequence 1471	AA159576	dbEST
Sequence 1472	AA161003	dbEST
Sequence 1473	AA161076	dbEST
Sequence 1474	AA161467	dbEST
Sequence 1475	AA164193	dbEST
Sequence 1476	AA164473	dbEST
Sequence 1477	AA164729	dbEST
Sequence 1478	AA164873	dbEST
Sequence 1479	AA165027	dbEST
Sequence 1480	AA165068	dbEST
Sequence 1481	AA165087	dbEST
Sequence 1482	AA165174	dbEST
Sequence 1483	AA165282	dbEST
Sequence 1484	AA165293	dbEST
Sequence 1485	AA165638	dbEST
Sequence 1486	AA166618	dbEST
Sequence 1487	AA167041	dbEST
Sequence 1488	AA167750	dbEST
Sequence 1489	AA171630	dbEST
Sequence 1490	AA173506	dbEST
Sequence 1491	AA174097	dbEST
Sequence 1492	AA179187	dbEST
Sequence 1493	AA180137	dbEST
Sequence 1494	AA180224	dbEST
Sequence 1495	AA180383	dbEST
Sequence 1496	AA181075	dbEST
Sequence 1497	AA181258	dbEST
Sequence 1498	AA181684	dbEST
Sequence 1499	AA182415	dbEST
Sequence 1500	AA182540	dbEST
Sequence 1501	AA186577	dbEST
Sequence 1502	AA187817	dbEST
Sequence 1503	AA188045	dbEST
Sequence 1504	AA188140	dbEST
Sequence 1505	AA188384	dbEST
Sequence 1506	AA188826	dbEST
Sequence 1507	AA190873	dbEST
Sequence 1508	AA191422	dbEST
Sequence 1509	AA192094	dbEST
Sequence 1510	AA193308	dbEST
Sequence 1511	AA194577	dbEST
Sequence 1512	AA195246	dbEST
Sequence 1513	AA195865	dbEST
Sequence 1514	AA196424	dbEST
Sequence 1515	AA196982	dbEST
Sequence 1516	AA203691	dbEST
Sequence 1517	AA204867	dbEST
Sequence 1518	AA206578	dbEST
Sequence 1519	AA206991	dbEST
Sequence 1520	AA209508	dbEST
Sequence 1521	AA216753	dbEST
Sequence 1522	AA219665	dbEST
Sequence 1523	AA223121	dbEST
Sequence 1524	AA223820	dbEST
Sequence 1525	AA224109	dbEST
Sequence 1526	AA224407	dbEST
Sequence 1527	AA227118	dbEST
Sequence 1528	AA229325	dbEST
Sequence 1529	AA229611	dbEST
Sequence 1530	AA232959	dbEST
Sequence 1531	AA233835	dbEST
Sequence 1532	AA233843	dbEST
Sequence 1533	AA234092	dbEST
Sequence 1534	AA234307	dbEST
Sequence 1535	AA236776	dbEST
Sequence 1536	AA242985	dbEST
Sequence 1537	AA243338	dbEST
Sequence 1538	AA244342	dbEST
Sequence 1539	AA249154	dbEST
Sequence 1540	AA255502	dbEST
Sequence 1541	AA256591	dbEST
Sequence 1542	AA261990	dbEST
Sequence 1543	AA262939	dbEST
Sequence 1544	AA278445	dbEST
Sequence 1545	AA278482	dbEST
Sequence 1546	AA278642	dbEST
Sequence 1547	AA278956	dbEST
Sequence 1548	AA279048	dbEST
Sequence 1549	AA280099	dbEST
Sequence 1550	AA280221	dbEST
Sequence 1551	AA280828	dbEST
Sequence 1552	AA282915	dbEST
Sequence 1553	AA284334	dbEST
Sequence 1554	AA284555	dbEST
Sequence 1555	AA284670	dbEST
Sequence 1556	AA284671	dbEST
Sequence 1557	AA284870	dbEST
Sequence 1558	AA284906	dbEST
Sequence 1559	AA285290	dbEST

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Sequence 1560	AA286699	dbEST	Sequence 1612	AA315379	dbEST
Sequence 1561	AA286872	dbEST	Sequence 1613	AA317243	dbEST
Sequence 1562	AA287219	dbEST	Sequence 1614	AA317393	dbEST
Sequence 1563	AA287642	dbEST	Sequence 1615	AA318969	dbEST
Sequence 1564	AA287815	dbEST	Sequence 1616	AA327201	dbEST
Sequence 1565	AA291438	dbEST	Sequence 1617	AA331991	dbEST
Sequence 1566	AA291485	dbEST	Sequence 1618	AA332672	dbEST
Sequence 1567	AA291971	dbEST	Sequence 1619	AA333358	dbEST
Sequence 1568	AA292334	dbEST	Sequence 1620	AA335273	dbEST
Sequence 1569	AA293127	dbEST	Sequence 1621	AA336666	dbEST
Sequence 1570	AA293133	dbEST	Sequence 1622	AA337192	dbEST
Sequence 1571	AA293273	dbEST	Sequence 1623	AA337489	dbEST
Sequence 1572	AA293286	dbEST	Sequence 1624	AA338793	dbEST
Sequence 1573	AA293353	dbEST	Sequence 1625	AA339957	dbEST
Sequence 1574	AA293572	dbEST	Sequence 1626	AA340341	dbEST
Sequence 1575	AA293629	dbEST	Sequence 1627	AA341446	dbEST
Sequence 1576	AA293759	dbEST	Sequence 1628	AA341465	dbEST
Sequence 1577	AA293804	dbEST	Sequence 1629	AA342969	dbEST
Sequence 1578	AA296780	dbEST	Sequence 1630	AA343629	dbEST
Sequence 1579	AA297402	dbEST	Sequence 1631	AA344084	dbEST
Sequence 1580	AA298505	dbEST	Sequence 1632	AA345329	dbEST
Sequence 1581	AA299640	dbEST	Sequence 1633	AA346393	dbEST
Sequence 1582	AA301062	dbEST	Sequence 1634	AA346698	dbEST
Sequence 1583	AA301800	dbEST	Sequence 1635	AA347887	dbEST
Sequence 1584	AA303461	dbEST	Sequence 1636	AA350059	dbEST
Sequence 1585	AA303568	dbEST	Sequence 1637	AA351507	dbEST
Sequence 1586	AA306718	dbEST	Sequence 1638	AA355003	dbEST
Sequence 1587	AA306862	dbEST	Sequence 1639	AA356682	dbEST
Sequence 1588	AA306876	dbEST	Sequence 1640	AA357574	dbEST
Sequence 1589	AA307198	dbEST	Sequence 1641	AA358887	dbEST
Sequence 1590	AA307325	dbEST	Sequence 1642	AA359705	dbEST
Sequence 1591	AA308065	dbEST	Sequence 1643	AA364352	dbEST
Sequence 1592	AA308274	dbEST	Sequence 1644	AA367451	dbEST
Sequence 1593	AA308744	dbEST	Sequence 1645	AA367773	dbEST
Sequence 1594	AA310739	dbEST	Sequence 1646	AA368542	dbEST
Sequence 1595	AA310771	dbEST	Sequence 1647	AA369400	dbEST
Sequence 1596	AA311228	dbEST	Sequence 1648	AA373230	dbEST
Sequence 1597	AA311460	dbEST	Sequence 1649	AA374754	dbEST
Sequence 1598	AA311571	dbEST	Sequence 1650	AA375312	dbEST
Sequence 1599	AA311801	dbEST	Sequence 1651	AA375815	dbEST
Sequence 1600	AA311848	dbEST	Sequence 1652	AA393525	dbEST
Sequence 1601	AA311905	dbEST	Sequence 1653	AA394115	dbEST
Sequence 1602	AA312218	dbEST	Sequence 1654	AA398443	dbEST
Sequence 1603	AA312240	dbEST	Sequence 1655	AA398585	dbEST
Sequence 1604	AA312435	dbEST	Sequence 1656	AA398739	dbEST
Sequence 1605	AA313108	dbEST	Sequence 1657	AA399165	dbEST
Sequence 1606	AA313223	dbEST	Sequence 1658	AA399628	dbEST
Sequence 1607	AA313653	dbEST	Sequence 1659	AA401329	dbEST
Sequence 1608	AA313994	dbEST	Sequence 1660	AA401334	dbEST
Sequence 1609	AA314431	dbEST	Sequence 1661	AA402191	dbEST
Sequence 1610	AA314872	dbEST	Sequence 1662	AA402289	dbEST
Sequence 1611	AA315363	dbEST	Sequence 1663	AA402775	dbEST

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Sequence 1664	AA403319	dbEST
Sequence 1665	AA404613	dbEST
Sequence 1666	AA405124	dbEST
Sequence 1667	AA406239	dbEST
Sequence 1668	AA410580	dbEST
Sequence 1669	AA410982	dbEST
Sequence 1670	AA411021	dbEST
Sequence 1671	AA411252	dbEST
Sequence 1672	AA411764	dbEST
Sequence 1673	AA417794	dbEST
Sequence 1674	AA419263	dbEST
Sequence 1675	AA419284	dbEST
Sequence 1676	AA420751	dbEST
Sequence 1677	AA420758	dbEST
Sequence 1678	AA421248	dbEST
Sequence 1679	AA421682	dbEST
Sequence 1680	AA422060	dbEST
Sequence 1681	AA422143	dbEST
Sequence 1682	AA425004	dbEST
Sequence 1683	AA425468	dbEST
Sequence 1684	AA425737	dbEST
Sequence 1685	AA429794	dbEST
Sequence 1686	AA430400	dbEST
Sequence 1687	AA430436	dbEST
Sequence 1688	AA431428	dbEST
Sequence 1689	AA433988	dbEST
Sequence 1690	AA436315	dbEST
Sequence 1691	AA436411	dbEST
Sequence 1692	AA443024	dbEST
Sequence 1693	AA449394	dbEST
Sequence 1694	AA451779	dbEST
Sequence 1695	AA453878	dbEST
Sequence 1696	AA454668	dbEST
Sequence 1697	AA454953	dbEST
Sequence 1698	AA454962	dbEST
Sequence 1699	AA455245	dbEST
Sequence 1700	AA455785	dbEST
Sequence 1701	AA456454	dbEST
Sequence 1702	AA456557	dbEST
Sequence 1703	AA457255	dbEST
Sequence 1704	AA457579	dbEST
Sequence 1705	AA459167	dbEST
Sequence 1706	AA459210	dbEST
Sequence 1707	AA459527	dbEST
Sequence 1708	AA460570	dbEST
Sequence 1709	AA460816	dbEST
Sequence 1710	AA461005	dbEST
Sequence 1711	AA468657	dbEST
Sequence 1712	AA469447	dbEST
Sequence 1713	AA469453	dbEST
Sequence 1714	AA476522	dbEST
Sequence 1715	AA477018	dbEST
Sequence 1716	AA477567	dbEST
Sequence 1717	AA477973	dbEST
Sequence 1718	AA478230	dbEST
Sequence 1719	AA479646	dbEST
Sequence 1720	AA479648	dbEST
Sequence 1721	AA479848	dbEST
Sequence 1722	AA481078	dbEST
Sequence 1723	AA481710	dbEST
Sequence 1724	AA482430	dbEST
Sequence 1725	AA482432	dbEST
Sequence 1726	AA482779	dbEST
Sequence 1727	AA483258	dbEST
Sequence 1728	AA483726	dbEST
Sequence 1729	AA483858	dbEST
Sequence 1730	AA484181	dbEST
Sequence 1731	AA486047	dbEST
Sequence 1732	AA486859	dbEST
Sequence 1733	AA488141	dbEST
Sequence 1734	AA488385	dbEST
Sequence 1735	AA488517	dbEST
Sequence 1736	AA489323	dbEST
Sequence 1737	AA489380	dbEST
Sequence 1738	AA489382	dbEST
Sequence 1739	AA491204	dbEST
Sequence 1740	AA492143	dbEST
Sequence 1741	AA493371	dbEST
Sequence 1742	AA494321	dbEST
Sequence 1743	AA494552	dbEST
Sequence 1744	AA501657	dbEST
Sequence 1745	AA502136	dbEST
Sequence 1746	AA505780	dbEST
Sequence 1747	AA512933	dbEST
Sequence 1748	AA514395	dbEST
Sequence 1749	AA514974	dbEST
Sequence 1750	AA515143	dbEST
Sequence 1751	AA516376	dbEST
Sequence 1752	AA521006	dbEST
Sequence 1753	AA523522	dbEST
Sequence 1754	AA524748	dbEST
Sequence 1755	AA524950	dbEST
Sequence 1756	AA525141	dbEST
Sequence 1757	AA526028	dbEST
Sequence 1758	AA527275	dbEST
Sequence 1759	AA527557	dbEST
Sequence 1760	AA533506	dbEST
Sequence 1761	AA534349	dbEST
Sequence 1762	AA534586	dbEST
Sequence 1763	AA534608	dbEST
Sequence 1764	AA535496	dbEST
Sequence 1765	AA541651	dbEST
Sequence 1766	AA548056	dbEST
Sequence 1767	AA548600	dbEST

TABLE 1A

Sequence 1768	AA550854	dbEST
Sequence 1769	AA550855	dbEST
Sequence 1770	AA551351	dbEST
Sequence 1771	AA551391	dbEST
Sequence 1772	AA554437	dbEST
Sequence 1773	AA554735	dbEST
Sequence 1774	AA555102	dbEST
Sequence 1775	AA564272	dbEST
Sequence 1776	AA564870	dbEST
Sequence 1777	AA565420	dbEST
Sequence 1778	AA568936	dbEST
Sequence 1779	AA569816	dbEST
Sequence 1780	AA569851	dbEST
Sequence 1781	AA569916	dbEST
Sequence 1782	AA573761	dbEST
Sequence 1783	AA573787	dbEST
Sequence 1784	AA577537	dbEST
Sequence 1785	AA578881	dbEST
Sequence 1786	AA579591	dbEST
Sequence 1787	AA579890	dbEST
Sequence 1788	AA580835	dbEST
Sequence 1789	AA582093	dbEST
Sequence 1790	AA582866	dbEST
Sequence 1791	AA583055	dbEST
Sequence 1792	AA583498	dbEST
Sequence 1793	AA583567	dbEST
Sequence 1794	AA583773	dbEST
Sequence 1795	AA584921	dbEST
Sequence 1796	AA586755	dbEST
Sequence 1797	AA587140	dbEST
Sequence 1798	AA587315	dbEST
Sequence 1799	AA587873	dbEST
Sequence 1800	AA593983	dbEST
Sequence 1801	AA594366	dbEST
Sequence 1802	AA595624	dbEST
Sequence 1803	AA595771	dbEST
Sequence 1804	AA599454	dbEST
Sequence 1805	AA600227	dbEST
Sequence 1806	AA600771	dbEST
Sequence 1807	AA601172	dbEST
Sequence 1808	AA602395	dbEST
Sequence 1809	AA602871	dbEST
Sequence 1810	AA603125	dbEST
Sequence 1811	AA603177	dbEST
Sequence 1812	AA604324	dbEST
Sequence 1813	AA604853	dbEST
Sequence 1814	AA610279	dbEST
Sequence 1815	AA610476	dbEST
Sequence 1816	AA610734	dbEST
Sequence 1817	AA614482	dbEST
Sequence 1818	AA628536	dbEST
Sequence 1819	AA628547	dbEST
Sequence 1820	AA630611	dbEST
Sequence 1821	AA631326	dbEST
Sequence 1822	AA633909	dbEST
Sequence 1823	AA634260	dbEST
Sequence 1824	AA634298	dbEST
Sequence 1825	AA640505	dbEST
Sequence 1826	AA641289	dbEST
Sequence 1827	AA644625	dbEST
Sequence 1828	AA648944	dbEST
Sequence 1829	AA651720	dbEST
Sequence 1830	AA652478	dbEST
Sequence 1831	AA652505	dbEST
Sequence 1832	AA653775	dbEST
Sequence 1833	AA658374	dbEST
Sequence 1834	AA663005	dbEST
Sequence 1835	AA669154	dbEST
Sequence 1836	AA677560	dbEST
Sequence 1837	AA677750	dbEST
Sequence 1838	AA678185	dbEST
Sequence 1839	AA678251	dbEST
Sequence 1840	AA687495	dbEST
Sequence 1841	AA703208	dbEST
Sequence 1842	AA703667	dbEST
Sequence 1843	AA703907	dbEST
Sequence 1844	AA704208	dbEST
Sequence 1845	AA706347	dbEST
Sequence 1846	AA714010	dbEST
Sequence 1847	AA715984	dbEST
Sequence 1848	AA716651	dbEST
Sequence 1849	AA719530	dbEST
Sequence 1850	AA721642	dbEST
Sequence 1851	AA729381	dbEST
Sequence 1852	AA731946	dbEST
Sequence 1853	AA736817	dbEST
Sequence 1854	AA742713	dbEST
Sequence 1855	AA743278	dbEST
Sequence 1856	AA744681	dbEST
Sequence 1857	AA745953	dbEST
Sequence 1858	AA759195	dbEST
Sequence 1859	AA767779	dbEST
Sequence 1860	AA769697	dbEST
Sequence 1861	AA773998	dbEST
Sequence 1862	AA775058	dbEST
Sequence 1863	AA776593	dbEST
Sequence 1864	AA777384	dbEST
Sequence 1865	AA778672	dbEST
Sequence 1866	AA779949	dbEST
Sequence 1867	AA781487	dbEST
Sequence 1868	AA788907	dbEST
Sequence 1869	AA806278	dbEST
Sequence 1870	AA806735	dbEST
Sequence 1871	AA808769	dbEST

TABLE 1A

Sequence 1872	AA810149	dbEST
Sequence 1873	AA811609	dbEST
Sequence 1874	AA813604	dbEST
Sequence 1875	AA826307	dbEST
Sequence 1876	AA833766	dbEST
Sequence 1877	AA833900	dbEST
Sequence 1878	AA837457	dbEST
Sequence 1879	AA843531	dbEST
Sequence 1880	AA845737	dbEST
Sequence 1881	AA846698	dbEST
Sequence 1882	AA846856	dbEST
Sequence 1883	AA852896	dbEST
Sequence 1884	AA856902	dbEST
Sequence 1885	AA857824	dbEST
Sequence 1886	AA857882	dbEST
Sequence 1887	AA861665	dbEST
Sequence 1888	AA865960	dbEST
Sequence 1889	AA868529	dbEST
Sequence 1890	AA873271	dbEST
Sequence 1891	AA877189	dbEST
Sequence 1892	AA884922	dbEST
Sequence 1893	AA886453	dbEST
Sequence 1894	AA906652	dbEST
Sequence 1895	AA906865	dbEST
Sequence 1896	AA918993	dbEST
Sequence 1897	AA926926	dbEST
Sequence 1898	AA928934	dbEST
Sequence 1899	AA932501	dbEST
Sequence 1900	AA933987	dbEST
Sequence 1901	AA935947	dbEST
Sequence 1902	AA937302	dbEST
Sequence 1903	AA937773	dbEST
Sequence 1904	AA947835	dbEST
Sequence 1905	AA954939	dbEST
Sequence 1906	AA962587	dbEST
Sequence 1907	AA962632	dbEST
Sequence 1908	AA972525	dbEST
Sequence 1909	AA976489	dbEST
Sequence 1910	AA983380	dbEST
Sequence 1911	AA984586	dbEST
Sequence 1912	AA992596	dbEST
Sequence 1913	AB002305	ANUC
Sequence 1914	AB002330	ANUC
Sequence 1915	AB002357	ANUC
Sequence 1916	AB002806	ANUC
Sequence 1917	AB003476	ANUC
Sequence 1918	AB004066	ANUC
Sequence 1919	AB006077	ANUC
Sequence 1920	AB006534	ANUC
Sequence 1921	AB006755	ANUC
Sequence 1922	AB007867	ANUC
Sequence 1923	AB007900	ANUC
Sequence 1924	AB007916	ANUC
Sequence 1925	AB007923	ANUC
Sequence 1926	AB007957	ANUC
Sequence 1927	AB011103	ANUC
Sequence 1928	AB011143	ANUC
Sequence 1929	AB011151	ANUC
Sequence 1930	AB011166	ANUC
Sequence 1931	AB014533	ANUC
Sequence 1932	AB014542	ANUC
Sequence 1933	AB014560	ANUC
Sequence 1934	AB015630	ANUC
Sequence 1935	AB015856	ANUC
Sequence 1936	AB018281	ANUC
Sequence 1937	AB018284	ANUC
Sequence 1938	AB018285	ANUC
Sequence 1939	AB018289	ANUC
Sequence 1940	AB018305	ANUC
Sequence 1941	AB018327	ANUC
Sequence 1942	AB018331	ANUC
Sequence 1943	AB018337	ANUC
Sequence 1944	AB019409	ANUC
Sequence 1945	AB019563	ANUC
Sequence 1946	AB019568	ANUC
Sequence 1947	AB019691	ANUC
Sequence 1948	AB020682	ANUC
Sequence 1949	AB020718	ANUC
Sequence 1950	AB021288	ANUC
Sequence 1951	AB023154	ANUC
Sequence 1952	AB023219	ANUC
Sequence 1953	AB024704	ANUC
Sequence 1954	AB027467	ANUC
Sequence 1955	AB028069	ANUC
Sequence 1956	AB028624	ANUC
Sequence 1957	AB028969	ANUC
Sequence 1958	AB028986	ANUC
Sequence 1959	AB029000	ANUC
Sequence 1960	AB029004	ANUC
Sequence 1961	AB029028	ANUC
Sequence 1962	AC03044	PREPATNUC
Sequence 1963	AC31479	PREPATNUC
Sequence 1964	AF000670	ANUC
Sequence 1965	AF000974	ANUC
Sequence 1966	AF001893	ANUC
Sequence 1967	AF004562	ANUC
Sequence 1968	AF006043	ANUC
Sequence 1969	AF007135	ANUC
Sequence 1970	AF007151	ANUC
Sequence 1971	AF007170	ANUC
Sequence 1972	AF009615	ANUC
Sequence 1973	AF013759	ANUC
Sequence 1974	AF013988	ANUC
Sequence 1975	AF015283	ANUC

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Sequence 1976	AF015767	ANUC	Sequence 2028	AF064019	ANUC
Sequence 1977	AF016507	ANUC	Sequence 2029	AF068235	ANUC
Sequence 1978	AF016582	ANUC	Sequence 2030	AF068846	ANUC
Sequence 1979	AF017790	ANUC	Sequence 2031	AF070523	ANUC
Sequence 1980	AF019767	ANUC	Sequence 2032	AF070537	ANUC
Sequence 1981	AF021351	ANUC	Sequence 2033	AF070555	ANUC
Sequence 1982	AF021819	ANUC	Sequence 2034	AF070561	ANUC
Sequence 1983	AF022229	ANUC	Sequence 2035	AF070596	ANUC
Sequence 1984	AF023266	ANUC	Sequence 2036	AF070600	ANUC
Sequence 1985	AF025439	ANUC	Sequence 2037	AF070626	ANUC
Sequence 1986	AF026166	ANUC	Sequence 2038	AF070649	ANUC
Sequence 1987	AF026939	ANUC	Sequence 2039	AF070662	ANUC
Sequence 1988	AF027205	ANUC	Sequence 2040	AF070672	ANUC
Sequence 1989	AF031385	ANUC	Sequence 2041	AF071202	ANUC
Sequence 1990	AF034607	ANUC	Sequence 2042	AF071219	ANUC
Sequence 1991	AF035286	ANUC	Sequence 2043	AF071593	ANUC
Sequence 1992	AF035309	ANUC	Sequence 2044	AF073298	ANUC
Sequence 1993	AF035313	ANUC	Sequence 2045	AF075587	ANUC
Sequence 1994	AF037204	ANUC	Sequence 2046	AF077030	ANUC
Sequence 1995	AF038661	ANUC	Sequence 2047	AF077045	ANUC
Sequence 1996	AF039019	ANUC	Sequence 2048	AF077200	ANUC
Sequence 1997	AF039291	ANUC	Sequence 2049	AF077202	ANUC
Sequence 1998	AF039843	ANUC	Sequence 2050	AF077207	ANUC
Sequence 1999	AF040990	ANUC	Sequence 2051	AF081192	ANUC
Sequence 2000	AF041483	ANUC	Sequence 2052	AF081484	ANUC
Sequence 2001	AF042385	ANUC	Sequence 2053	AF083190	ANUC
Sequence 2002	AF042729	ANUC	Sequence 2054	AF085355	ANUC
Sequence 2003	AF044588	ANUC	Sequence 2055	AF086003	ANUC
Sequence 2004	AF045184	ANUC	Sequence 2056	AF086116	ANUC
Sequence 2005	AF047438	ANUC	Sequence 2057	AF086178	ANUC
Sequence 2006	AF047472	ANUC	Sequence 2058	AF086205	ANUC
Sequence 2007	AF048977	ANUC	Sequence 2059	AF086207	ANUC
Sequence 2008	AF050171	ANUC	Sequence 2060	AF086336	ANUC
Sequence 2009	AF050199	ANUC	Sequence 2061	AF086517	ANUC
Sequence 2010	AF050639	ANUC	Sequence 2062	AF087135	ANUC
Sequence 2011	AF052124	ANUC	Sequence 2063	AF087990	ANUC
Sequence 2012	AF052135	ANUC	Sequence 2064	AF088036	ANUC
Sequence 2013	AF052149	ANUC	Sequence 2065	AF091076	ANUC
Sequence 2014	AF052164	ANUC	Sequence 2066	AF092563	ANUC
Sequence 2015	AF052169	ANUC	Sequence 2067	AF095287	ANUC
Sequence 2016	AF052180	ANUC	Sequence 2068	AF095791	ANUC
Sequence 2017	AF052514	ANUC	Sequence 2069	AF097709	ANUC
Sequence 2018	AF054183	ANUC	Sequence 2070	AF100741	ANUC
Sequence 2019	AF054187	ANUC	Sequence 2071	AF100756	ANUC
Sequence 2020	AF054840	ANUC	Sequence 2072	AF100928	ANUC
Sequence 2021	AF055012	ANUC	Sequence 2073	AF104222	ANUC
Sequence 2022	AF055033	ANUC	Sequence 2074	AF104913	ANUC
Sequence 2023	AF057299	ANUC	Sequence 2075	AF104923	ANUC
Sequence 2024	AF059252	ANUC	Sequence 2076	AF107405	ANUC
Sequence 2025	AF061258	ANUC	Sequence 2077	AF120334	ANUC
Sequence 2026	AF062318	ANUC	Sequence 2078	AF124438	ANUC
Sequence 2027	AF063611	ANUC	Sequence 2079	AF124439	ANUC

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Sequence 2080	AF125525	ANUC
Sequence 2081	AF131799	ANUC
Sequence 2082	AF131814	ANUC
Sequence 2083	AF139461	ANUC
Sequence 2084	AF139658	ANUC
Sequence 2085	AF144755	ANUC
Sequence 2086	AF147331	ANUC
Sequence 2087	AF150962	ANUC
Sequence 2088	AF151832	ANUC
Sequence 2089	AF151868	ANUC
Sequence 2090	AF151898	ANUC
Sequence 2091	AF151907	ANUC
Sequence 2092	AF152097	ANUC
Sequence 2093	AF159295	ANUC
Sequence 2094	AF176702	ANUC
Sequence 2095	AF190744	ANUC
Sequence 2096	AI004664	dbEST
Sequence 2097	AI004915	dbEST
Sequence 2098	AI016073	dbEST
Sequence 2099	AI016323	dbEST
Sequence 2100	AI016791	dbEST
Sequence 2101	AI018451	dbEST
Sequence 2102	AI018625	dbEST
Sequence 2103	AI022779	dbEST
Sequence 2104	AI023799	dbEST
Sequence 2105	AI026164	dbEST
Sequence 2106	AI027516	dbEST
Sequence 2107	AI031636	dbEST
Sequence 2108	AI033037	dbEST
Sequence 2109	AI034115	dbEST
Sequence 2110	AI037859	dbEST
Sequence 2111	AI041670	dbEST
Sequence 2112	AI042034	dbEST
Sequence 2113	AI042290	dbEST
Sequence 2114	AI051971	dbEST
Sequence 2115	AI056917	dbEST
Sequence 2116	AI057124	dbEST
Sequence 2117	AI066419	dbEST
Sequence 2118	AI078041	dbEST
Sequence 2119	AI081116	dbEST
Sequence 2120	AI081472	dbEST
Sequence 2121	AI081913	dbEST
Sequence 2122	AI082244	dbEST
Sequence 2123	AI082648	dbEST
Sequence 2124	AI084731	dbEST
Sequence 2125	AI085381	dbEST
Sequence 2126	AI087291	dbEST
Sequence 2127	AI087819	dbEST
Sequence 2128	AI088178	dbEST
Sequence 2129	AI089981	dbEST
Sequence 2130	AI090524	dbEST
Sequence 2131	AI090623	dbEST
Sequence 2132	AI091425	dbEST
Sequence 2133	AI092971	dbEST
Sequence 2134	AI095477	dbEST
Sequence 2135	AI123229	dbEST
Sequence 2136	AI125642	dbEST
Sequence 2137	AI125874	dbEST
Sequence 2138	AI127013	dbEST
Sequence 2139	AI127556	dbEST
Sequence 2140	AI140291	dbEST
Sequence 2141	AI141130	dbEST
Sequence 2142	AI141847	dbEST
Sequence 2143	AI143899	dbEST
Sequence 2144	AI144100	dbEST
Sequence 2145	AI148251	dbEST
Sequence 2146	AI149429	dbEST
Sequence 2147	AI149592	dbEST
Sequence 2148	AI186028	dbEST
Sequence 2149	AI186042	dbEST
Sequence 2150	AI190341	dbEST
Sequence 2151	AI192367	dbEST
Sequence 2152	AI192629	dbEST
Sequence 2153	AI198930	dbEST
Sequence 2154	AI216969	dbEST
Sequence 2155	AI217003	dbEST
Sequence 2156	AI223292	dbEST
Sequence 2157	AI241706	dbEST
Sequence 2158	AI251743	dbEST
Sequence 2159	AI252466	dbEST
Sequence 2160	AI253330	dbEST
Sequence 2161	AI253335	dbEST
Sequence 2162	AI253338	dbEST
Sequence 2163	AI253375	dbEST
Sequence 2164	AI253379	dbEST
Sequence 2165	AI253436	dbEST
Sequence 2166	AI262380	dbEST
Sequence 2167	AI263674	dbEST
Sequence 2168	AI267162	dbEST
Sequence 2169	AI267185	dbEST
Sequence 2170	AI267209	dbEST
Sequence 2171	AI267289	dbEST
Sequence 2172	AI267307	dbEST
Sequence 2173	AI267321	dbEST
Sequence 2174	AI267454	dbEST
Sequence 2175	AI267502	dbEST
Sequence 2176	AI268293	dbEST
Sequence 2177	AI269060	dbEST
Sequence 2178	AI269369	dbEST
Sequence 2179	AI270183	dbEST
Sequence 2180	AI270472	dbEST
Sequence 2181	AI271786	dbEST
Sequence 2182	AI272827	dbEST
Sequence 2183	AI274047	dbEST

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Sequence 2184	AI276341	dbEST	Sequence 2236	AI608591	dbEST
Sequence 2185	AI276839	dbEST	Sequence 2237	AI608787	dbEST
Sequence 2186	AI278611	dbEST	Sequence 2238	AI608968	dbEST
Sequence 2187	AI280022	dbEST	Sequence 2239	AI609193	dbEST
Sequence 2188	AI283548	dbEST	Sequence 2240	AI609281	dbEST
Sequence 2189	AI288965	dbEST	Sequence 2241	AI623804	dbEST
Sequence 2190	AI290565	dbEST	Sequence 2242	AI628689	dbEST
Sequence 2191	AI291683	dbEST	Sequence 2243	AI636635	dbEST
Sequence 2192	AI292286	dbEST	Sequence 2244	AI650837	dbEST
Sequence 2193	AI298472	dbEST	Sequence 2245	AI654096	dbEST
Sequence 2194	AI298941	dbEST	Sequence 2246	AI660245	dbEST
Sequence 2195	AI304857	dbEST	Sequence 2247	AI669253	dbEST
Sequence 2196	AI308959	dbEST	Sequence 2248	AI670084	dbEST
Sequence 2197	AI312552	dbEST	Sequence 2249	AI674313	dbEST
Sequence 2198	AI333055	dbEST	Sequence 2250	AI678152	dbEST
Sequence 2199	AI333116	dbEST	Sequence 2251	AI678703	dbEST
Sequence 2200	AI335249	dbEST	Sequence 2252	AI679044	dbEST
Sequence 2201	AI336326	dbEST	Sequence 2253	AI679321	dbEST
Sequence 2202	AI345325	dbEST	Sequence 2254	AI683140	dbEST
Sequence 2203	AI366549	dbEST	Sequence 2255	AI683338	dbEST
Sequence 2204	AI367850	dbEST	Sequence 2256	AI683793	dbEST
Sequence 2205	AI375624	dbEST	Sequence 2257	AI688798	dbEST
Sequence 2206	AI376561	dbEST	Sequence 2258	AI692866	dbEST
Sequence 2207	AI399636	dbEST	Sequence 2259	AI694087	dbEST
Sequence 2208	AI417384	dbEST	Sequence 2260	AI696819	dbEST
Sequence 2209	AI421720	dbEST	Sequence 2261	AI697501	dbEST
Sequence 2210	AI424841	dbEST	Sequence 2262	AI734922	dbEST
Sequence 2211	AI431507	dbEST	Sequence 2263	AI735069	dbEST
Sequence 2212	AI433180	dbEST	Sequence 2264	AI739337	dbEST
Sequence 2213	AI434084	dbEST	Sequence 2265	AI739377	dbEST
Sequence 2214	AI434401	dbEST	Sequence 2266	AI743595	dbEST
Sequence 2215	AI436016	dbEST	Sequence 2267	AI743691	dbEST
Sequence 2216	AI436448	dbEST	Sequence 2268	AI750198	dbEST
Sequence 2217	AI446503	dbEST	Sequence 2269	AI750909	dbEST
Sequence 2218	AI453199	dbEST	Sequence 2270	AI751119	dbEST
Sequence 2219	AI459028	dbEST	Sequence 2271	AI751364	dbEST
Sequence 2220	AI469237	dbEST	Sequence 2272	AI751565	dbEST
Sequence 2221	AI492520	dbEST	Sequence 2273	AI752319	dbEST
Sequence 2222	AI492769	dbEST	Sequence 2274	AI752553	dbEST
Sequence 2223	AI494344	dbEST	Sequence 2275	AI752929	dbEST
Sequence 2224	AI523940	dbEST	Sequence 2276	AI753108	dbEST
Sequence 2225	AI524677	dbEST	Sequence 2277	AI753671	dbEST
Sequence 2226	AI538682	dbEST	Sequence 2278	AI754437	dbEST
Sequence 2227	AI557059	dbEST	Sequence 2279	AI755181	dbEST
Sequence 2228	AI561260	dbEST	Sequence 2280	AI758869	dbEST
Sequence 2229	AI567988	dbEST	Sequence 2281	AI761927	dbEST
Sequence 2230	AI569715	dbEST	Sequence 2282	AI763126	dbEST
Sequence 2231	AI581291	dbEST	Sequence 2283	AI791906	dbEST
Sequence 2232	AI583211	dbEST	Sequence 2284	AI793120	dbEST
Sequence 2233	AI583570	dbEST	Sequence 2285	AI799521	dbEST
Sequence 2234	AI589301	dbEST	Sequence 2286	AI804346	dbEST
Sequence 2235	AI597938	dbEST	Sequence 2287	AI808109	dbEST

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Sequence 2288	AI811021	dbEST
Sequence 2289	AI811845	dbEST
Sequence 2290	AI814139	dbEST
Sequence 2291	AI814674	dbEST
Sequence 2292	AI815868	dbEST
Sequence 2293	AI822030	dbEST
Sequence 2294	AI827641	dbEST
Sequence 2295	AI859619	dbEST
Sequence 2296	AI864580	dbEST
Sequence 2297	AI878968	dbEST
Sequence 2298	AI879179	dbEST
Sequence 2299	AI879367	dbEST
Sequence 2300	AI879992	dbEST
Sequence 2301	AI888377	dbEST
Sequence 2302	AI911704	dbEST
Sequence 2303	AI911997	dbEST
Sequence 2304	AI912084	dbEST
Sequence 2305	AI916284	dbEST
Sequence 2306	AI916584	dbEST
Sequence 2307	AI923224	dbEST
Sequence 2308	AI924096	dbEST
Sequence 2309	AI928185	dbEST
Sequence 2310	AI929819	dbEST
Sequence 2311	AI936748	dbEST
Sequence 2312	AI950087	dbEST
Sequence 2313	AI955808	dbEST
Sequence 2314	AJ001258	ANUC
Sequence 2315	AJ002030	ANUC
Sequence 2316	AJ006026	ANUC
Sequence 2317	AJ011001	ANUC
Sequence 2318	AJ011915	ANUC
Sequence 2319	AJ012499	ANUC
Sequence 2320	AJ223183	ANUC
Sequence 2321	AL035802	dbEST
Sequence 2322	AL035987	dbEST
Sequence 2323	AL036801	dbEST
Sequence 2324	AL037646	dbEST
Sequence 2325	AL038985	dbEST
Sequence 2326	AL039150	dbEST
Sequence 2327	AL041780	dbEST
Sequence 2328	AL044019	dbEST
Sequence 2329	AL046804	dbEST
Sequence 2330	AL049055	dbEST
Sequence 2331	AL049227	ANUC
Sequence 2332	AL049229	ANUC
Sequence 2333	AL049296	ANUC
Sequence 2334	AL049464	ANUC
Sequence 2335	AL049953	ANUC
Sequence 2336	AL049954	ANUC
Sequence 2337	AL049955	ANUC
Sequence 2338	AL049959	ANUC
Sequence 2339	AL049987	ANUC
Sequence 2340	AL049999	ANUC
Sequence 2341	AL050011	ANUC
Sequence 2342	AL050089	ANUC
Sequence 2343	AL050141	ANUC
Sequence 2344	AL050171	ANUC
Sequence 2345	AL050187	ANUC
Sequence 2346	AL050198	ANUC
Sequence 2347	AL050217	ANUC
Sequence 2348	AL050392	ANUC
Sequence 2349	AL080062	ANUC
Sequence 2350	AL080186	ANUC
Sequence 2351	AL080235	ANUC
Sequence 2352	AL096857	ANUC
Sequence 2353	AL096858	ANUC
Sequence 2354	AL110197	ANUC
Sequence 2355	AL110235	ANUC
Sequence 2356	AL117237	ANUC
Sequence 2357	AL117499	ANUC
Sequence 2358	AL117534	ANUC
Sequence 2359	AL118999	dbEST
Sequence 2360	AL119085	dbEST
Sequence 2361	AL119157	dbEST
Sequence 2362	AW020479	dbEST
Sequence 2363	AW044114	dbEST
Sequence 2364	AW102841	dbEST
Sequence 2365	C02094	dbEST
Sequence 2366	C16886	dbEST
Sequence 2367	C18886	dbEST
Sequence 2368	D00017	ANUC
Sequence 2369	D00022	ANUC
Sequence 2370	D00068	ANUC
Sequence 2371	D00099	ANUC
Sequence 2372	D00422	ANUC
Sequence 2373	D10495	ANUC
Sequence 2374	D13119	ANUC
Sequence 2375	D13287	ANUC
Sequence 2376	D13665	ANUC
Sequence 2377	D13866	ANUC
Sequence 2378	D14662	ANUC
Sequence 2379	D14697	ANUC
Sequence 2380	D14710	ANUC
Sequence 2381	D14812	ANUC
Sequence 2382	D15049	ANUC
Sequence 2383	D16431	ANUC
Sequence 2384	D16937	ANUC
Sequence 2385	D17188	ANUC
Sequence 2386	D17268	ANUC
Sequence 2387	D17409	ANUC
Sequence 2388	D17793	ANUC
Sequence 2389	D21063	ANUC
Sequence 2390	D23660	ANUC
Sequence 2391	D25542	ANUC

TABLE 1A

Sequence 2392	D28759	ANUC	Sequence 2444	E01813	ANUC
Sequence 2393	D29677	ANUC	Sequence 2445	E01827	ANUC
Sequence 2394	D31767	ANUC	Sequence 2446	E01979	ANUC
Sequence 2395	D31784	ANUC	Sequence 2447	E02628	ANUC
Sequence 2396	D31883	ANUC	Sequence 2448	E02651	ANUC
Sequence 2397	D31890	ANUC	Sequence 2449	E03569	ANUC
Sequence 2398	D37991	ANUC	Sequence 2450	E06721	ANUC
Sequence 2399	D38491	ANUC	Sequence 2451	E07218	ANUC
Sequence 2400	D38583	ANUC	Sequence 2452	F28779	dbEST
Sequence 2401	D43948	ANUC	Sequence 2453	F30276	dbEST
Sequence 2402	D43950	ANUC	Sequence 2454	F31082	dbEST
Sequence 2403	D45248	ANUC	Sequence 2455	H03854	dbEST
Sequence 2404	D45887	ANUC	Sequence 2456	H05412	dbEST
Sequence 2405	D45915	ANUC	Sequence 2457	H08994	dbEST
Sequence 2406	D49489	ANUC	Sequence 2458	H13339	dbEST
Sequence 2407	D49547	ANUC	Sequence 2459	H16426	dbEST
Sequence 2408	D50310	ANUC	Sequence 2460	H39960	dbEST
Sequence 2409	D50371	ANUC	Sequence 2461	H48742	dbEST
Sequence 2410	D55192	dbEST	Sequence 2462	H59372	dbEST
Sequence 2411	D55649	ANUC	Sequence 2463	H60722	dbEST
Sequence 2412	D56120	dbEST	Sequence 2464	H69238	dbEST
Sequence 2413	D59253	ANUC	Sequence 2465	H72481	dbEST
Sequence 2414	D78586	ANUC	Sequence 2466	H75695	dbEST
Sequence 2415	D79826	dbEST	Sequence 2467	H78517	dbEST
Sequence 2416	D79983	ANUC	Sequence 2468	H79084	dbEST
Sequence 2417	D79986	ANUC	Sequence 2469	H84729	dbEST
Sequence 2418	D79997	ANUC	Sequence 2470	H85709	dbEST
Sequence 2419	D80006	ANUC	Sequence 2471	H89654	dbEST
Sequence 2420	D80012	ANUC	Sequence 2472	J00269	ANUC
Sequence 2421	D80087	dbEST	Sequence 2473	J02621	ANUC
Sequence 2422	D80253	dbEST	Sequence 2474	J03005	ANUC
Sequence 2423	D81635	dbEST	Sequence 2475	J03040	ANUC
Sequence 2424	D82128	dbEST	Sequence 2476	J03171	ANUC
Sequence 2425	D82348	ANUC	Sequence 2477	J03191	ANUC
Sequence 2426	D83197	ANUC	Sequence 2478	J03210	ANUC
Sequence 2427	D83327	ANUC	Sequence 2479	J03464	ANUC
Sequence 2428	D83784	ANUC	Sequence 2480	J03473	ANUC
Sequence 2429	D86227	ANUC	Sequence 2481	J03799	ANUC
Sequence 2430	D87437	ANUC	Sequence 2482	J04080	ANUC
Sequence 2431	D87442	ANUC	Sequence 2483	J04164	ANUC
Sequence 2432	D87470	ANUC	Sequence 2484	J04177	ANUC
Sequence 2433	D87666	ANUC	Sequence 2485	J04765	ANUC
Sequence 2434	D87667	ANUC	Sequence 2486	J05013	ANUC
Sequence 2435	D87682	ANUC	Sequence 2487	J05021	ANUC
Sequence 2436	D87735	ANUC	Sequence 2488	J05192	ANUC
Sequence 2437	D87969	ANUC	Sequence 2489	J05633	ANUC
Sequence 2438	D89052	ANUC	Sequence 2490	K00558	ANUC
Sequence 2439	D90226	ANUC	Sequence 2491	K01566	ANUC
Sequence 2440	D90373	ANUC	Sequence 2492	K02765	ANUC
Sequence 2441	E00882	ANUC	Sequence 2493	L00160	ANUC
Sequence 2442	E01650	ANUC	Sequence 2494	L02547	ANUC
Sequence 2443	E01797	ANUC	Sequence 2495	L05092	ANUC

TABLE 1A

Sequence 2496	L05186	ANUC	Sequence 2548	M26041	ANUC
Sequence 2497	L07633	ANUC	Sequence 2549	M26152	ANUC
Sequence 2498	L11066	ANUC	Sequence 2550	M26325	ANUC
Sequence 2499	L11932	ANUC	Sequence 2551	M27913	ANUC
Sequence 2500	L12711	ANUC	Sequence 2552	M27971	ANUC
Sequence 2501	L13848	ANUC	Sequence 2553	M28373	ANUC
Sequence 2502	L14599	ANUC	Sequence 2554	M31159	ANUC
Sequence 2503	L19161	ANUC	Sequence 2555	M31212	ANUC
Sequence 2504	L19184	ANUC	Sequence 2556	M31899	ANUC
Sequence 2505	L19597	ANUC	Sequence 2557	M32110	ANUC
Sequence 2506	L20941	ANUC	Sequence 2558	M32790	ANUC
Sequence 2507	L23959	ANUC	Sequence 2559	M32798	ANUC
Sequence 2508	L26081	ANUC	Sequence 2560	M33308	ANUC
Sequence 2509	L27560	ANUC	Sequence 2561	M34064	ANUC
Sequence 2510	L28010	ANUC	Sequence 2562	M37583	ANUC
Sequence 2511	L28809	ANUC	Sequence 2563	M38106	ANUC
Sequence 2512	L33404	ANUC	Sequence 2564	M55409	ANUC
Sequence 2513	L33930	ANUC	Sequence 2565	M55542	ANUC
Sequence 2514	L34155	ANUC	Sequence 2566	M58485	ANUC
Sequence 2515	L34839	ANUC	Sequence 2567	M60457	ANUC
Sequence 2516	L38486	ANUC	Sequence 2568	M60854	ANUC
Sequence 2517	L42024	ANUC	Sequence 2569	M62403	ANUC
Sequence 2518	L43575	ANUC	Sequence 2570	M62810	ANUC
Sequence 2519	L44349	dbEST	Sequence 2571	M64241	ANUC
Sequence 2520	L54057	ANUC	Sequence 2572	M67468	ANUC
Sequence 2521	M10036	ANUC	Sequence 2573	M69181	ANUC
Sequence 2522	M10119	ANUC	Sequence 2574	M74002	ANUC
Sequence 2523	M10905	ANUC	Sequence 2575	M75126	ANUC
Sequence 2524	M11146	ANUC	Sequence 2576	M76729	ANUC
Sequence 2525	M13573	ANUC	Sequence 2577	M78113	dbEST
Sequence 2526	M13955	ANUC	Sequence 2578	M81757	ANUC
Sequence 2527	M14083	ANUC	Sequence 2579	M83248	ANUC
Sequence 2528	M14483	ANUC	Sequence 2580	M84739	ANUC
Sequence 2529	M14630	ANUC	Sequence 2581	M87503	ANUC
Sequence 2530	M14631	ANUC	Sequence 2582	M88279	ANUC
Sequence 2531	M15182	ANUC	Sequence 2583	M92357	ANUC
Sequence 2532	M15800	ANUC	Sequence 2584	N20576	dbEST
Sequence 2533	M16247	ANUC	Sequence 2585	N34255	dbEST
Sequence 2534	M16553	ANUC	Sequence 2586	N35187	dbEST
Sequence 2535	M16660	ANUC	Sequence 2587	N35421	dbEST
Sequence 2536	M16937	ANUC	Sequence 2588	N39717	dbEST
Sequence 2537	M17597	ANUC	Sequence 2589	N40823	dbEST
Sequence 2538	M17885	ANUC	Sequence 2590	N40852	dbEST
Sequence 2539	M20372	ANUC	Sequence 2591	N67927	dbEST
Sequence 2540	M22146	ANUC	Sequence 2592	N76180	dbEST
Sequence 2541	M22382	ANUC	Sequence 2593	N76677	dbEST
Sequence 2542	M22590	ANUC	Sequence 2594	N77080	dbEST
Sequence 2543	M22918	ANUC	Sequence 2595	N84497	dbEST
Sequence 2544	M22920	ANUC	Sequence 2596	N86776	dbEST
Sequence 2545	M23613	ANUC	Sequence 2597	N91638	dbEST
Sequence 2546	M24194	ANUC	Sequence 2598	N92086	dbEST
Sequence 2547	M25246	ANUC	Sequence 2599	N99205	dbEST

TABLE 1A

Sequence 2600	Q37741	NUCPATENT	Sequence 2652	U22815	ANUC
Sequence 2601	Q48043	NUCPATENT	Sequence 2653	U24105	ANUC
Sequence 2602	Q65676	NUCPATENT	Sequence 2654	U24153	ANUC
Sequence 2603	Q90526	NUCPATENT	Sequence 2655	U27768	ANUC
Sequence 2604	R06046	dbEST	Sequence 2656	U33760	ANUC
Sequence 2605	R17092	dbEST	Sequence 2657	U33833	ANUC
Sequence 2606	R47228	dbEST	Sequence 2658	U34877	ANUC
Sequence 2607	R55150	dbEST	Sequence 2659	U39361	ANUC
Sequence 2608	R55398	dbEST	Sequence 2660	U41515	ANUC
Sequence 2609	R68132	dbEST	Sequence 2661	U46570	ANUC
Sequence 2610	R72676	dbEST	Sequence 2662	U50733	ANUC
Sequence 2611	R73306	dbEST	Sequence 2663	U51586	ANUC
Sequence 2612	R78333	dbEST	Sequence 2664	U56255	ANUC
Sequence 2613	R92367	dbEST	Sequence 2665	U59305	ANUC
Sequence 2614	R93637	dbEST	Sequence 2666	U60975	ANUC
Sequence 2615	R99649	dbEST	Sequence 2667	U61083	ANUC
Sequence 2616	S41458	ANUC	Sequence 2668	U61397	ANUC
Sequence 2617	S42303	ANUC	Sequence 2669	U63846	ANUC
Sequence 2618	S54005	ANUC	Sequence 2670	U67784	ANUC
Sequence 2619	S66431	ANUC	Sequence 2671	U68723	ANUC
Sequence 2620	S70154	ANUC	Sequence 2672	U68727	ANUC
Sequence 2621	S70290	ANUC	Sequence 2673	U68758	ANUC
Sequence 2622	S79895	ANUC	Sequence 2674	U70735	ANUC
Sequence 2623	S82076	ANUC	Sequence 2675	U77085	ANUC
Sequence 2624	T02792	NUCPATENT	Sequence 2676	U79258	ANUC
Sequence 2625	T24119	dbEST	Sequence 2677	U79274	ANUC
Sequence 2626	T49314	dbEST	Sequence 2678	U79278	ANUC
Sequence 2627	T53479	dbEST	Sequence 2679	U80213	ANUC
Sequence 2628	T58797	dbEST	Sequence 2680	U81234	ANUC
Sequence 2629	T64560	dbEST	Sequence 2681	U82130	ANUC
Sequence 2630	T66112	NUCPATENT	Sequence 2682	U86602	ANUC
Sequence 2631	T92160	NUCPATENT	Sequence 2683	U87309	ANUC
Sequence 2632	T92396	dbEST	Sequence 2684	U90028	ANUC
Sequence 2633	U00947	ANUC	Sequence 2685	U90441	ANUC
Sequence 2634	U04815	ANUC	Sequence 2686	U90902	ANUC
Sequence 2635	U07151	ANUC	Sequence 2687	U90917	ANUC
Sequence 2636	U07857	ANUC	Sequence 2688	U94831	ANUC
Sequence 2637	U08470	ANUC	Sequence 2689	V00478	ANUC
Sequence 2638	U10323	ANUC	Sequence 2690	V00503	ANUC
Sequence 2639	U10439	ANUC	Sequence 2691	V05728	NUCPATENT
Sequence 2640	U12465	ANUC	Sequence 2692	V11636	NUCPATENT
Sequence 2641	U13665	ANUC	Sequence 2693	V57903	NUCPATENT
Sequence 2642	U13877	ANUC	Sequence 2694	V59662	NUCPATENT
Sequence 2643	U14550	ANUC	Sequence 2695	V59746	NUCPATENT
Sequence 2644	U14966	ANUC	Sequence 2696	V84428	NUCPATENT
Sequence 2645	U15008	ANUC	Sequence 2697	V86232	NUCPATENT
Sequence 2646	U16306	ANUC	Sequence 2698	V87930	NUCPATENT
Sequence 2647	U17104	ANUC	Sequence 2699	W07215	dbEST
Sequence 2648	U17496	ANUC	Sequence 2700	W19127	dbEST
Sequence 2649	U19769	ANUC	Sequence 2701	W19407	dbEST
Sequence 2650	U20896	ANUC	Sequence 2702	W19441	dbEST
Sequence 2651	U22431	ANUC	Sequence 2703	W25547	dbEST

TABLE 1A

Sequence 2704	W26197	dbEST
Sequence 2705	W38952	dbEST
Sequence 2706	W56388	dbEST
Sequence 2707	W68015	dbEST
Sequence 2708	W73140	dbEST
Sequence 2709	W73168	dbEST
Sequence 2710	W76204	dbEST
Sequence 2711	W87522	dbEST
Sequence 2712	W87891	dbEST
Sequence 2713	X00351	ANUC
Sequence 2714	X00497	ANUC
Sequence 2715	X01742	ANUC
Sequence 2716	X01924	NUCPATENT
Sequence 2717	X03084	ANUC
Sequence 2718	X04098	ANUC
Sequence 2719	X04408	ANUC
Sequence 2720	X04470	ANUC
Sequence 2721	X05276	ANUC
Sequence 2722	X05908	ANUC
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Sequence 2727	X15729	ANUC
Sequence 2728	X15880	ANUC
Sequence 2729	X16869	ANUC
Sequence 2730	X17206	ANUC
Sequence 2731	X24068	NUCPATENT
Sequence 2732	X37385	NUCPATENT
Sequence 2733	X37509	NUCPATENT
Sequence 2734	X40178	NUCPATENT
Sequence 2735	X51466	ANUC
Sequence 2736	X53505	ANUC
Sequence 2737	X54304	ANUC
Sequence 2738	X54941	ANUC
Sequence 2739	X55110	ANUC
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Sequence 2741	X56932	ANUC
Sequence 2742	X56998	ANUC
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Sequence 2746	X63432	ANUC
Sequence 2747	X66360	ANUC
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Sequence 2761	X76180	ANUC
Sequence 2762	X78627	ANUC
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Sequence 2764	X82676	ANUC
Sequence 2765	X84939	NUCPATENT
Sequence 2766	X85373	ANUC
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Sequence 2768	X93207	ANUC
Sequence 2769	X94323	ANUC
Sequence 2770	X94754	ANUC
Sequence 2771	X97324	ANUC
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Sequence 2774	Y00757	ANUC
Sequence 2775	Y00815	ANUC
Sequence 2776	Y09188	ANUC
Sequence 2777	Y11435	ANUC
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Sequence 2780	Y13286	ANUC
Sequence 2781	Y15286	ANUC
Sequence 2782	Y17114	ANUC
Sequence 2783	Z18538	ANUC
Sequence 2784	Z18954	ANUC
Sequence 2785	Z19054	ANUC
Sequence 2786	Z21507	ANUC
Sequence 2787	Z26317	ANUC
Sequence 2788	Z29093	ANUC
Sequence 2789	Z31696	ANUC
Sequence 2790	Z32564	ANUC
Sequence 2791	Z36531	ANUC
Sequence 2792	Z37986	ANUC
Sequence 2793	Z46629	ANUC
Sequence 2794	Z47087	ANUC
Sequence 2795	Z74615	ANUC

TABLE 1A

Sequence 340: found in patent publication W098/39446
AGGCGTNCCTCTGACTGCCCACTCAGTGGCNNCACCNGGGAGCTGNTTTGGNGCTTTGGG
GANCCTNAACANTTNCNTCTTTCAAAACTNACTGGC

Sequence 1962: found in patent publication W098/42738
AGGTACCCGCTCTCCTGCTTCAGTAAATCTCCACTCGATCTCAGTGGGTTTCCTGTCCAT
AGGATCCACAAGTTTGACCTGGCGGTGGAGCAAGGGGGCTTCACTAGGGATCATGGTTCC
CCGGTAATCCATGGTCTTGCCAATGTAGCCGGTAATGTGTGTTCAGCCCTCCCACGACCA
CCCAGTTTCGCTGCCGGATAACTTGAACCACTTTGCCCTGCTTCCCGGCATCCTTGCCTT
CTAGGATCTCCACCGTGTCCCCACAGAACAGATACCAAGTCTTCATCAGAGATGGGTTCC
ACAACCACTGGGCCGCCGNCTGATCCATGGGGGGTTCTTCCTCTTGTCTGCAACAGAGCC
TGGGGGGCTCATCCATAACGGTNATGGGGGGGCAGAGTGACCTTGGATGCCAAGGCCAGC
AGGGGCAAGAAAGACCCATGCCTGGAGGTTGNAAGAAAATCCCTTTGCCAGCAAAAACGC
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Sequence 341: found in patent publication W099/039941
CCCTTAGCGNGGTCGCGGCCGAGGCACAATTCGATTATTCACANGAAAGGGCAAACTGTT
NNTGTTNGCTGGCAGGAGNAGGTGCATATATACCAGCACTTCAAGTNNGGTATTTCCATT
CAGGACATTTTATCTCTGTGCAAAGACCGGAGTAGAAGCTGATGAGTGGATCAAGATATT
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GACTCACCGTTGCTGCCCTTNCATGGATGTTGCCATCTGCTTGAGAACACTGAAGCAATC
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Sequence 342: found in patent publication W099/18126
CCGCGGTGGCGGCCGCCCGGGCAGGTACCTACAGTGACACAGATCCCCTCCCGCCATCCT
GGTCACACTGAATAACAAAGGGAAGAGAGGAGTAAGAACTGTAGTATCTAGAAATTCTCA
GCACAGTGAAGGAAAGTGATCTTCTACTTTGTATTCAGGCCTAAAAAAGGAGGGGACGGG
CCCGGCACAGTGGCTCACACCTGTAATCCCAGCACTCTGGGAGGCCAAGGAGGGCAGATC
ACCTGAGGTTGGGAGTTTGAGACCAGCCTGACCAACATGGAGAAACCCTGTCTCTACTAA
AAACACAAAATTAGCCAGGCATGGTGGCATGCGCCTATAAACCAAGCTACTCAAGAGGCT
GAGGCAGGAGAATTGCTTGAACCCAGGAGGCAGAGGTTGTGGTGAGCCAAGATCGAGCCA
TCACACTCCAGCCTGGGCAACAAGAGCAAAACTCTGTCTCAAAAAAAAAAACAGGAGAGG
AGGGAG

Sequence 1016: found in patent publication W099/38881
CTACTTAGGGCGAATTGGAGCTCCCCGCGGTGGCGGCCGAGGTCAAGCTTCGACCCCGCG
TCCGTGATAAACTACTTTTGGGTTTTATTTCATTGAGGCACTTTTTTTATTGTTTGAATG
ATTCCGGCTTGTAATATATCAGCCTCTACAATGAAATGCAGAAGAGTTCATTTTTCTAG
ATCTGTTTTTCATTAGAAATATTGACAAATAACACATTGTCAACCTGGATCCTTTGACA
TTTACTTAACTCTGGCATGTTCACAAAAAGTAGAAACTCTAAGAGACCATTACCATTTT
TCACAGATGTATAGGGGATGTATTCTAAAAACTGACAGAAAAGAGAATNTGATAGTCAAC
ACTGTTAACTTTTACTGNGTAATTGCCAAATACACTTTTCCAAATTTGTCCCAACAGCC
TNTAAGCCAGCTTTCTTCTATATTTATAA

Sequence 1963: found in patent publication W099/46289
AACTGGACAGAGTAAGGGAATTCCAGCATCCTCTTCCTGCTTGCTCGTGTTACCCCACAG
ATCAAACCCTCAATTCTAGTTGGGGATGCTGTCTAGCCCCACACCATGACTGAAGCCTTA

TABLE 1A

AGCACTGTTGCGCCTCATGTGCTTTGGATCAGCAACCCCAGTGGTATTCTACCAGAGCAT
TGTGGGAAAGCAGATGTATAGTCAGGTCCCAACAGCAAATTGTTGGGTGTGAGAGTTCTA
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TTAACTTTTATGTCTACTTAACAAGAGAACCTGNAGAAAACTACCGTATTCAAGAGATA
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TTGTAATGTCTGTAATAAATTTCAGTGCGTCAGGATGGATGAACCCAAGATCCAGTGAAT
GATTCAGCTGTTCCAAGCCTTACATTTTCCATCATTCATCATCCATTCTCATTCAGTGA
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TABLE 1-1

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AA001066	DBEst	1437265
AA007157	DBEst	1463141
AA010954	DBEst	1472001
AA015792	DBEst	1476959
AA019769	DBEst	1483105
AA019948	DBEst	1483755
AA022925	DBEst	1487005
AA022937	DBEst	1487036
AA024405	DBEst	1489413
AA029750	DBEst	1496068
AA031509	DBEst	1501463
AA033876	DBEst	1505694
AA034237	DBEst	1506265
AA039967	DBEst	1516280
AA040073	DBEst	1516350
AA040122	DBEst	1516400
AA045732	DBEst	1525626
AA045861	DBEst	1525757
AA046835	DBEst	1524734
AA047026	DBEst	1525061
AA047417	DBEst	1525463
AA053486	DBEst	1544124
AA054658	DBEst	1545600
AA055606	DBEst	1547963
AA056113	DBEst	1548469
AA056176	DBEst	1548514
AA056363	DBEst	1548703
AA056431	DBEst	1548771
AA065336	DBEst	1929216
AA069781	DBEst	1577149
AA069784	DBEst	1577152
AA069839	DBEst	1577199
AA069983	DBEst	1577343
AA071255	DBEst	1578610
AA075135	DBEst	1615139
AA081655	DBEst	1623857
AA082245	DBEst	1624304
AA083471	DBEst	1625557
AA083510	DBEst	1625570
AA085862	DBEst	1629449
AA085872	DBEst	1629244
AA085947	DBEst	1629482
AA088770	DBEst	1634335
AA100333	DBEst	1646685
AA100719	DBEst	1647074
AA100793	DBEst	1647210
AA100852	DBEst	1647269
AA101270	DBEst	1647951
AA101561	DBEst	1648449
AA111907	DBEst	1663978
AA112043	DBEst	1664189
AA112308	DBEst	1664577
AA112375	DBEst	1664785
AA113860	DBEst	1667753
AA114120	DBEst	1667996
AA115118	DBEst	1669966
AA115368	DBEst	1670548
AA122286	DBEst	1678525
AA122348	DBEst	1678587
AA126109	DBEst	1685775
AA127105	DBEst	1686466
AA127132	DBEst	1686492
AA127418	DBEst	1686707

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AA128305	DBEst	1688355
AA129461	DBEst	1689332
AA130252	DBEst	1691414
AA130547	DBEst	1692100
AA130786	DBEst	1692452
AA131041	DBEst	1692593
AA131065	DBEst	1692555
AA131104	DBEst	1692612
AA131155	DBEst	1692646
AA131160	DBEst	1692668
AA132182	DBEst	1693860
AA132568	DBEst	1694075
AA132598	DBEst	1694087
AA133351	DBEst	1690319
AA133927	DBEst	1690994
AA134105	DBEst	1691317
AA134210	DBEst	1691566
AA135032	DBEst	1696143
AA135919	DBEst	1697105
AA136383	DBEst	1697611
AA136789	DBEst	1697998
AA143609	DBEst	1713177
AA146773	DBEst	1716163
AA147806	DBEst	1717195
AA148160	DBEst	1717542
AA148268	DBEst	1717666
AA148771	DBEst	1721626
AA149056	DBEst	1719347
AA150307	DBEst	1721837
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AA152037	DBEst	1720875
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AA155853	DBEst	1727471
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AA157405	DBEst	1729013
AA157725	DBEst	1729350
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AA158165	DBEst	1732959
AA158171	DBEst	1732965
AA159272	DBEst	1734074
AA160114	DBEst	1734680
AA160685	DBEst	1736087
AA161410	DBEst	1735771
AA164405	DBEst	1740715
AA164465	DBEst	1740624
AA165083	DBEst	1740311
AA165629	DBEst	1741662
AA166973	DBEst	1745366
AA171510	DBEst	1750569
AA173031	DBEst	1754310
AA173470	DBEst	1753798
AA173630	DBEst	1753763
AA179462	DBEst	1760830
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AA188591	DBEst	1775616
AA192108	DBEst	1781932
AA199710	DBEst	1795418
AA203224	DBEst	1798950
AA203284	DBEst	1799010
AA205851	DBEst	1801222
AA209431	DBEst	1807445

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ACC NUM	DATABASE	GI NBR
AA209531	DBEst	1807492
AA214075	DBEst	1812697
AA216612	DBEst	1817292
AA224230	DBEst	1844755
AA224985	DBEst	1846276
AA226502	DBEst	1847857
AA229225	DBEst	1851057
AA232626	DBEst	1855763
AA233843	DBEst	1856920
AA242891	DBEst	1873684
AA250725	DBEst	1885707
AA250982	DBEst	1885943
AA256959	DBEst	1891227
AA259077	DBEst	1894348
AA262440	DBEst	1897800
AA263110	DBEst	1898920
AA283165	DBEst	1926099
AA285260	DBEst	1929570
AA287112	DBEst	1934119
AA292191	DBEst	1940291
AA292334	DBEst	1940314
AA292385	DBEst	1940380
AA292771	DBEst	1941593
AA293273	DBEst	1941423
AA293572	DBEst	1941239
AA295348	DBEst	1947743
AA295485	DBEst	1947839
AA301631	DBEst	1954115
AA304669	DBEst	1957001
AA304961	DBEst	1957288
AA305193	DBEst	1957520
AA305438	DBEst	1957763
AA306542	DBEst	1958871
AA306708	DBEst	1959036
AA306945	DBEst	1959275
AA307239	DBEst	1959567
AA307477	DBEst	1960025
AA307504	DBEst	1959872
AA307697	DBEst	1960187
AA307779	DBEst	1960177
AA308062	DBEst	1960391
AA308801	DBEst	1961131
AA309028	DBEst	1961354
AA309988	DBEst	1962337
AA311006	DBEst	1963405
AA311481	DBEst	1963975
AA312012	DBEst	1964341
AA313684	DBEst	1966083
AA314146	DBEst	1966495
AA315049	DBEst	1967529
AA315308	DBEst	1967637
AA315426	DBEst	1967755
AA316682	DBEst	1969010
AA319958	DBEst	1972449
AA320346	DBEst	1972675
AA320991	DBEst	1973319
AA328544	DBEst	1980860
AA330457	DBEst	1982700
AA338793	DBEst	1991103
AA340069	DBEst	1992307
AA341170	DBEst	1993406
AA342394	DBEst	1994715
AA348250	DBEst	2000486

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ACC NUM	DATABASE	GI NBR
AA349148	DBEst	2001385
AA351443	DBEst	2003763
AA351880	DBEst	2004198
AA356158	DBEst	2008784
AA356187	DBEst	2008516
AA356195	DBEst	2008524
AA357374	DBEst	2009714
AA367446	DBEst	2019764
AA375236	DBEst	2027555
AA377718	DBEst	2030037
AA380997	DBEst	2033336
AA383917	DBEst	2036256
AA385147	DBEst	2037466
AA389641	DBEst	2042627
AA393164	DBEst	2046134
AA393236	DBEst	2046205
AA394242	DBEst	2047227
AA398732	DBEst	2051854
AA401864	DBEst	2055883
AA410508	DBEst	2069614
AA410580	DBEst	2069686
AA410942	DBEst	2070196
AA411334	DBEst	2068883
AA411599	DBEst	2069132
AA418061	DBEst	2079935
AA418473	DBEst	2080273
AA418970	DBEst	2080798
AA420789	DBEst	2094677
AA421682	DBEst	2100499
AA421850	DBEst	2100809
AA424529	DBEst	2103499
AA428421	DBEst	2112235
AA429754	DBEst	2112972
AA441787	DBEst	2153671
AA451633	DBEst	2165302
AA453309	DBEst	2166978
AA453559	DBEst	2167228
AA453570	DBEst	2167239
AA454871	DBEst	2177647
AA454913	DBEst	2177689
AA456892	DBEst	2179612
AA457048	DBEst	2179768
AA463426	DBEst	2188310
AA465039	DBEst	2189923
AA477173	DBEst	2205857
AA480921	DBEst	2210473
AA484050	DBEst	2212863
AA484756	DBEst	2214141
AA487483	DBEst	2217647
AA489640	DBEst	2219242
AA493886	DBEst	2223727
AA494493	DBEst	2224280
AA496518	DBEst	2229839
AA501749	DBEst	2236716
AA501822	DBEst	2236789
AA501945	DBEst	2236912
AA504490	DBEst	2240650
AA507234	DBEst	2243673
AA513640	DBEst	2252052
AA526227	DBEst	2268296
AA526889	DBEst	2268958
AA527139	DBEst	2269208
AA527188	DBEst	2269257

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ACC NUM	DATABASE	GI NBR
AA531428	DBEst	2274134
AA532633	DBEst	2276887
AA535471	DBEst	2279724
AA554757	DBEst	2325296
AA565996	DBEst	2337635
AA568217	DBEst	2341271
AA573742	DBEst	2348257
AA573893	DBEst	2348408
AA574237	DBEst	2348752
AA576866	DBEst	2354340
AA579034	DBEst	2357218
AA579816	DBEst	2358000
AA581220	DBEst	2358992
AA581264	DBEst	2359036
AA582093	DBEst	2360771
AA583091	DBEst	2360451
AA584411	DBEst	2369020
AA586776	DBEst	2397590
AA587110	DBEst	2397924
AA587233	DBEst	2398047
AA587700	DBEst	2401875
AA609259	DBEst	2457687
AA609837	DBEst	2458265
AA613907	DBEst	2466041
AA614529	DBEst	2466725
AA618033	DBEst	2505238
AA628487	DBEst	2540874
AA631204	DBEst	2553815
AA631811	DBEst	2554422
AA640901	DBEst	2566151
AA641841	DBEst	2567059
AA642215	DBEst	2567433
AA643602	DBEst	2568820
AA651720	DBEst	2583372
AA664996	DBEst	2619609
AA668297	DBEst	2629796
AA668836	DBEst	2630335
AA675923	DBEst	2775270
AA687833	DBEst	2674739
AA704992	DBEst	2714910
AA732702	DBEst	2753309
AA745241	DBEst	2785227
AA746481	DBEst	2786467
AA758889	DBEst	2806752
AA772570	DBEst	2824353
AA772790	DBEst	2825632
AA776709	DBEst	2836043
AA776811	DBEst	2836142
AA777384	DBEst	2836715
AA778116	DBEst	2837517
AA779868	DBEst	2839199
AA781343	DBEst	2840674
AA809984	DBEst	2879390
AA810945	DBEst	2880556
AA811200	DBEst	2880811
AA825768	DBEst	2899080
AA828073	DBEst	2900436
AA828722	DBEst	2901821
AA843176	DBEst	2929694
AA843661	DBEst	2930179
AA876526	DBEst	2985603
AA883255	DBEst	2992785
AA906652	DBEst	3042238

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ACC NUM	DATABASE	GI NBR
AA917638	DBEst	3057528
AA927734	DBEst	3076554
AA954939	DBEst	3118634
AA962622	DBEst	3134786
AA991285	DBEst	3177774
AB000115	GenBank	2564034
AB004047	GenBank	2116654
AB006746	GenBank	3510296
AB007619	GenBank	2465179
AB007860	GenBank	2662080
AB007965	GenBank	3413940
AB011101	GenBank	3043581
AB011169	GenBank	3043717
AB012701	GenBank	6714554
AB014536	GenBank	3327085
AB014565	GenBank	3327143
AB019568	GenBank	3885371
AB020623	GenBank	3985929
AB020629	GenBank	4240129
AB020693	GenBank	4240260
AB021288	GenBank	4038732
AB022663	GenBank	5019617
AB023214	GenBank	4589637
AB023230	GenBank	4589675
AC02059	N/A	N/A
AC03653	N/A	N/A
AC13415	N/A	N/A
AF000982	GenBank	2580549
AF002985	GenBank	2580585
AF005654	GenBank	2337951
AF006086	GenBank	2282037
AF007791	GenBank	3779196
AF013758	GenBank	3046899
AF013988	GenBank	2318114
AF021232	GenBank	3452182
AF026939	GenBank	2612967
AF026941	GenBank	2612970
AF026942	GenBank	2612971
AF026943	GenBank	2612972
AF026944	GenBank	2612973
AF028832	GenBank	3287488
AF030455	GenBank	3169829
AF030514	GenBank	3219692
AF031469	GenBank	4104081
AF033095	GenBank	2645728
AF035286	GenBank	2661038
AF035316	GenBank	2661078
AF037204	GenBank	2906012
AF038451	GenBank	3779225
AF038662	GenBank	3132899
AF038963	GenBank	4405794
AF043431	GenBank	3452280
AF044956	GenBank	5326827
AF045941	GenBank	3893854
AF046997	GenBank	3170363
AF051894	GenBank	3095110
AF052124	GenBank	3360431
AF052578	GenBank	2967847
AF053233	GenBank	2996191
AF054838	GenBank	2997740
AF055012	GenBank	3005735
AF061736	GenBank	4335936
AF061738	GenBank	4335940

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ACC NUM	DATABASE	GI NBR
AF064603	GenBank	3152659
AF064854	GenBank	4206066
AF065388	GenBank	3152700
AF067168	GenBank	4894369
AF067174	GenBank	4894381
AF067817	GenBank	3928846
AF070523	GenBank	3764088
AF070561	GenBank	3387928
AF070562	GenBank	3387930
AF070596	GenBank	3387973
AF070664	GenBank	4454703
AF070674	GenBank	3978243
AF077048	GenBank	4689143
AF077051	GenBank	4689149
AF077200	GenBank	4679013
AF077671	GenBank	3386485
AF080246	GenBank	3406799
AF081484	GenBank	3420928
AF083470	GenBank	3719293
AF084523	GenBank	3550342
AF085355	GenBank	5114044
AF086003	GenBank	3483348
AF086080	GenBank	3483425
AF086183	GenBank	3483528
AF086545	GenBank	3483890
AF091263	GenBank	4140646
AF111713	GenBank	5326796
AF118023	GenBank	4836400
AF124438	GenBank	4838431
AF124439	GenBank	4838433
AF131808	GenBank	4406640
AF131820	GenBank	4406655
AF131848	GenBank	4406690
AF132966	GenBank	4680702
AF132968	GenBank	4680706
AF146277	GenBank	4960046
AF147331	GenBank	4761682
AF150100	GenBank	5107187
AF150266	DBEst	5133702
AF151873	GenBank	4929698
AF151877	GenBank	4929706
AF151978	GenBank	5732679
AF167160	GenBank	5733691
AI023413	DBEst	3239819
AI027888	DBEst	3246587
AI031811	DBEst	3250023
AI033687	DBEst	3254640
AI042140	DBEst	3281334
AI075324	DBEst	3399895
AI075876	DBEst	3405054
AI126802	DBEst	3595316
AI127556	DBEst	3596070
AI129360	DBEst	3597874
AI139456	DBEst	3645428
AI140291	DBEst	3647748
AI144215	DBEst	3666024
AI161378	DBEst	3693062
AI188638	DBEst	3739847
AI215617	DBEst	3784658
AI216969	DBEst	3789623
AI241578	DBEst	3836975
AI250167	DBEst	3846696
AI253330	DBEst	3850451

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ACC NUM	DATABASE	GI NBR
AI253335	DBEst	3850456
AI253369	DBEst	3850490
AI253436	DBEst	3850391
AI261671	DBEst	3869874
AI262264	DBEst	3870467
AI267162	DBEst	3886329
AI267379	DBEst	3886546
AI267502	DBEst	3886669
AI267622	DBEst	3886789
AI279131	DBEst	3917365
AI285943	DBEst	3924176
AI289173	DBEst	3932437
AI290876	DBEst	3933650
AI292104	DBEst	3934878
AI300033	DBEst	3959379
AI300074	DBEst	3959420
AI312113	DBEst	4017718
AI336032	DBEst	4072959
AI337069	DBEst	4073996
AI340262	DBEst	4077189
AI346975	DBEst	4084181
AI354639	DBEst	4094792
AI366381	DBEst	4126070
AI369024	DBEst	4147777
AI382020	DBEst	4194801
AI400372	DBEst	4243459
AI417973	DBEst	4261477
AI431963	DBEst	4306858
AI453405	DBEst	4281647
AI457157	DBEst	4310026
AI457624	DBEst	4310493
AI459679	DBEst	4312560
AI460010	DBEst	4312891
AI469095	DBEst	4331185
AI469715	DBEst	4331805
AI471539	DBEst	4333629
AI476335	DBEst	4329380
AI479289	DBEst	4372457
AI499285	DBEst	4391267
AI521180	DBEst	4435315
AI538061	DBEst	4452196
AI567204	DBEst	4525656
AI587104	DBEst	4573545
AI587328	DBEst	4573769
AI609624	DBEst	4618791
AI610607	DBEst	4619774
AI612873	DBEst	4622040
AI627444	DBEst	4664244
AI632869	DBEst	4684199
AI633164	DBEst	4684494
AI636014	DBEst	4687344
AI637620	DBEst	4689854
AI676218	DBEst	4876698
AI683871	DBEst	4894053
AI684170	DBEst	4895464
AI693877	DBEst	4971217
AI694088	DBEst	4971428
AI732534	DBEst	5053647
AI743595	DBEst	5111883
AI744489	DBEst	5112777
AI745058	DBEst	5113346
AI753108	DBEst	5131372
AI791322	DBEst	5339038

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ACC NUM	DATABASE	GI NBR
AI798474	DBEst	5363946
AI803838	DBEst	5369310
AI811960	DBEst	5398526
AI813617	DBEst	5424832
AI815829	DBEst	5431375
AI826957	DBEst	5447628
AI831002	DBEst	5451673
AI863041	DBEst	5527148
AI867294	DBEst	5540310
AI912076	DBEst	5631931
AI915553	DBEst	5635408
AJ001381	GenBank	2764616
AJ003401	DBEst	2769433
AJ010071	GenBank	3483016
AJ132502	GenBank	5629914
AL044356	DBEst	5432578
AL044825	DBEst	5433037
AL047024	DBEst	5435080
AL048393	DBEst	5936479
AL049313	GenBank	4500086
AL049923	GenBank	4884169
AL049954	GenBank	4884203
AL050024	GenBank	4884093
AL050272	GenBank	4886498
AL050395	GenBank	4914616
AL096714	GenBank	5419847
AL096748	GenBank	5419879
AL096842	GenBank	5524930
AL110124	GenBank	5817017
C17346	DBEst	1572053
D00017	GenBank	219909
D00068	GenBank	220080
D11960	DBEst	2148277
D12502	GenBank	219494
D12763	GenBank	220076
D13380	GenBank	220033
D13645	GenBank	286008
D13866	GenBank	433410
D14697	GenBank	285964
D21260	GenBank	434760
D23660	GenBank	432358
D26155	GenBank	505086
D26599	GenBank	565648
D28759	GenBank	633074
D29640	GenBank	473930
D31763	GenBank	498151
D31767	GenBank	505091
D31883	GenBank	505093
D38524	GenBank	633070
D42040	GenBank	577292
D45248	GenBank	1008914
D49396	GenBank	682747
D50372	GenBank	2605593
D50420	GenBank	2618577
D55653	GenBank	871882
D81522	DBEst	1179399
D83077	GenBank	1304131
D83767	GenBank	1913784
D86958	GenBank	1503989
D86979	GenBank	6634000
D87666	GenBank	1620016
D87667	GenBank	1620019
D87735	GenBank	1620021

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ACC NUM	DATABASE	GI NBR
D88532	GenBank	1661000
D89053	GenBank	4165017
D90311	GenBank	219496
D90453	GenBank	219897
E01197	GenBank	2169456
E01198	GenBank	2169457
E01630	GenBank	2169883
E01954	GenBank	2170202
E01971	GenBank	2170219
E01972	GenBank	2170220
E02628	GenBank	2170856
E03569	GenBank	2171785
E03879	GenBank	2172093
E08663	GenBank	2176776
F06593	DBEst	672186
F28779	DBEst	4814405
H25806	DBEst	894929
H47546	DBEst	923598
H48873	DBEst	988713
H66467	DBEst	1025207
H88415	DBEst	1070675
J00196	GenBank	188242
J03575	GenBank	189737
J03858	GenBank	179439
J03909	GenBank	186264
J04164	GenBank	177801
K00422	GenBank	184322
K01763	GenBank	184316
L00693	GenBank	180228
L02426	GenBank	403455
L06328	GenBank	340200
L09159	GenBank	307374
L10413	GenBank	388755
L11066	GenBank	307322
L20688	GenBank	404044
L20941	GenBank	507251
L28997	GenBank	607027
L38995	GenBank	704415
L41490	GenBank	927064
M10119	GenBank	182517
M13536	GenBank	180248
M14328	GenBank	182113
M14764	GenBank	189204
M15329	GenBank	186277
M16660	GenBank	184420
M17017	GenBank	179579
M18216	GenBank	178690
M19723	GenBank	186726
M22918	GenBank	189019
M23613	GenBank	189271
M24194	GenBank	187701
M24594	GenBank	186262
M26152	GenBank	1160968
M29540	GenBank	180222
M29541	GenBank	189103
M29551	GenBank	180708
M33146	GenBank	181070
M34064	GenBank	416292
M34455	GenBank	185790
M35198	GenBank	9446401
M36693	GenBank	338285
M37716	GenBank	338266
M55268	GenBank	177837

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ACC NUM	DATABASE	GI NBR
M55542	GenBank	183001
M55543	GenBank	829176
M57567	GenBank	178986
M60333	GenBank	188268
M61715	GenBank	340367
M62831	GenBank	182260
M63121	GenBank	339755
M63838	GenBank	184568
M68520	GenBank	180177
M77945	DBEst	273682
M80563	GenBank	179916
M81757	GenBank	337732
M83248	GenBank	189150
M83654	GenBank	179660
M86553	GenBank	179958
M87284	GenBank	338651
M87434	GenBank	338653
M87503	GenBank	184652
M92357	GenBank	306463
M96982	GenBank	338262
M97501	GenBank	180621
M97935	GenBank	2281070
N36346	DBEst	1157488
N51262	DBEst	1192428
N57413	DBEst	1201303
N78477	DBEst	1241178
N92060	DBEst	1264369
Q21065	N/A	N/A
Q94780	N/A	N/A
R13925	DBEst	767001
R51732	DBEst	813634
R56461	DBEst	826567
R66489	DBEst	839127
R75621	DBEst	850303
S45630	GenBank	256398
S70290	GenBank	546602
S75295	GenBank	913392
S76638	GenBank	243420
T34641	DBEst	616739
T50925	DBEst	652785
T52715	DBEst	654575
T54951	DBEst	656812
T70793	DBEst	685314
U03886	GenBank	458225
U04313	GenBank	453368
U07550	GenBank	469170
U07857	GenBank	469048
U08815	GenBank	508722
U09559	GenBank	791184
U09847	GenBank	495565
U10439	GenBank	577169
U14966	GenBank	550012
U18321	GenBank	603763
U19878	GenBank	755465
U23942	GenBank	1698395
U25789	GenBank	808089
U28249	GenBank	897916
U28964	GenBank	899458
U32500	GenBank	1000750
U32944	GenBank	1209060
U33760	GenBank	995823
U37230	GenBank	1574941
U37518	GenBank	1149557

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ACC NUM	DATABASE	GI NBR
U38292	GenBank	1790879
U38784	GenBank	1574947
U41371	GenBank	1173904
U41515	GenBank	1209723
U52513	GenBank	1777781
U56255	GenBank	1399688
U57847	GenBank	1373420
U61083	GenBank	4097430
U68758	GenBank	4097815
U73524	GenBank	1644401
U77085	GenBank	1684789
U78722	GenBank	1699000
U79751	GenBank	2257753
U94586	GenBank	1946691
V00572	GenBank	35434
V00594	GenBank	37120
V04202	N/A	N/A
V17906	N/A	N/A
V36078	N/A	N/A
V68140	N/A	N/A
V86134	N/A	N/A
W02908	DBEst	1274885
W05711	DBEst	1278502
W07308	DBEst	1281506
W25547	DBEst	1303421
W28837	DBEst	1308785
W37272	DBEst	1318866
W38644	DBEst	1320349
W39262	DBEst	1320979
W39498	DBEst	1321206
W52254	DBEst	1349394
W74319	DBEst	1384468
W77987	DBEst	1388521
W80480	DBEst	1391538
X00637	GenBank	32429
X01742	GenBank	35324
X02530	GenBank	33917
X02661	GenBank	23795
X04316	N/A	N/A
X04371	GenBank	23792
X04470	GenBank	28638
X05908	GenBank	34387
X07819	GenBank	35798
X13238	GenBank	1200056
X15674	GenBank	35995
X15729	GenBank	38317
X16354	GenBank	37197
X16356	GenBank	37203
X16455	GenBank	29854
X17025	GenBank	488749
X20432	N/A	N/A
X30167	N/A	N/A
X33937	N/A	N/A
X35726	N/A	N/A
X41105	N/A	N/A
X51841	GenBank	33910
X54941	GenBank	29976
X56932	GenBank	23690
X57351	GenBank	311373
X59710	GenBank	35049
X65614	GenBank	36177
X67951	GenBank	287640
X68060	GenBank	37230

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ACC NUM	DATABASE	GI NBR
X68277	GenBank	29980
X72790	GenBank	311401
X76488	GenBank	434305
X83544	GenBank	1089849
X85134	GenBank	755749
X87949	GenBank	1143491
X93036	GenBank	1085025
X99699	GenBank	1869900
X99920	GenBank	1694827
Y09267	GenBank	1834492
Y13323	GenBank	5042231
Y17392	GenBank	3212109
Z12830	GenBank	551637
Z36815	GenBank	533929
Z47087	GenBank	860989
Z48570	GenBank	695580
Z71389	GenBank	2239127
AA002223	DBEst	1445158
AA018843	DBEst	1482235
AA021647	DBEst	1485308
AA022842	DBEst	1487015
AA022965	DBEst	1487064
AA024522	DBEst	1489238
AA028164	DBEst	1494289
AA035775	DBEst	1507603
AA037294	DBEst	1512438
AA039967	DBEst	1516280
AA045637	DBEst	1525513
AA046815	DBEst	1524920
AA046853	DBEst	1524752
AA047052	DBEst	1524950
AA047213	DBEst	1525113
AA057071	DBEst	1549810
AA058933	DBEst	1551788
AA064952	DBEst	1559216
AA075089	DBEst	1615078
AA076291	DBEst	1616160
AA078508	DBEst	1837982
AA080864	DBEst	1623371
AA083345	DBEst	1625405
AA083693	DBEst	1625753
AA085497	DBEst	1628765
AA086463	DBEst	1629080
AA093935	DBEst	1639528
AA100291	DBEst	1646582
AA101207	DBEst	1647860
AA102403	DBEst	1647188
AA111856	DBEst	1663943
AA115174	DBEst	1670371
AA122134	DBEst	1678255
AA122291	DBEst	1678547
AA125780	DBEst	1685521
AA127322	DBEst	1686638
AA130432	DBEst	1691715
AA131801	DBEst	1693290
AA132445	DBEst	1694012
AA134109	DBEst	1691321
AA135924	DBEst	1697110
AA136322	DBEst	1697597
AA143034	DBEst	1712411
AA150057	DBEst	1721279
AA151651	DBEst	1720206
AA156335	DBEst	1727969

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ACC NUM	DATABASE	GI NBR
AA157333	DBEst	1728942
AA158987	DBEst	1733823
AA165439	DBEst	1741455
AA165632	DBEst	1741665
AA166618	DBEst	1745207
AA172067	DBEst	1751125
AA173031	DBEst	1754310
AA178870	DBEst	1760393
AA181874	DBEst	1765359
AA195194	DBEst	1784884
AA203206	DBEst	1798916
AA203289	DBEst	1799038
AA204768	DBEst	1802618
AA206621	DBEst	1802009
AA213914	DBEst	1812716
AA218919	DBEst	1832993
AA224050	DBEst	1844591
AA224244	DBEst	1844769
AA227596	DBEst	1849140
AA229018	DBEst	1851983
AA229161	DBEst	1851090
AA236445	DBEst	1858734
AA236680	DBEst	1860973
AA243537	DBEst	1874328
AA252436	DBEst	1887407
AA252869	DBEst	1885537
AA256330	DBEst	1891867
AA262700	DBEst	1898112
AA278358	DBEst	1921666
AA287076	DBEst	1934137
AA291551	DBEst	1939545
AA293273	DBEst	1941423
AA295982	DBEst	1948378
AA301675	DBEst	1954018
AA301722	DBEst	1954065
AA302964	DBEst	1955294
AA303199	DBEst	1955604
AA304927	DBEst	1957254
AA305042	DBEst	1957368
AA305635	DBEst	1957960
AA315030	DBEst	1967520
AA315943	DBEst	1968272
AA317144	DBEst	1969699
AA326060	DBEst	1978315
AA327358	DBEst	1979623
AA336387	DBEst	1988636
AA346413	DBEst	1998651
AA352580	DBEst	2004900
AA363162	DBEst	2015480
AA375754	DBEst	2028074
AA399230	DBEst	2053028
AA400249	DBEst	2054315
AA401629	DBEst	2055827
AA402885	DBEst	2056782
AA406401	DBEst	2064402
AA421682	DBEst	2100499
AA422057	DBEst	2100890
AA424445	DBEst	2103415
AA424901	DBEst	2107006
AA424984	DBEst	2107137
AA425182	DBEst	2105974
AA428607	DBEst	2112800
AA446099	DBEst	2158764

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ACC NUM	DATABASE	GI NBR
AA446403	DBEst	2159068
AA447735	DBEst	2161405
AA449054	DBEst	2163074
AA449205	DBEst	2162668
AA449520	DBEst	2163270
AA452273	DBEst	2165942
AA455007	DBEst	2177783
AA455104	DBEst	2177880
AA459527	DBEst	2184434
AA460226	DBEst	2185042
AA461287	DBEst	2186407
AA464526	DBEst	2189410
AA468398	DBEst	2194932
AA469135	DBEst	2195669
AA469453	DBEst	2194248
AA470690	DBEst	2197999
AA479427	DBEst	2207983
AA480336	DBEst	2208487
AA483454	DBEst	2212267
AA487669	DBEst	2217833
AA488423	DBEst	2215854
AA488635	DBEst	2216066
AA488843	DBEst	2218445
AA489772	DBEst	2220656
AA503972	DBEst	2238939
AA508506	DBEst	2246009
AA513550	DBEst	2251962
AA513783	DBEst	2252204
AA514989	DBEst	2254589
AA516400	DBEst	2253762
AA520993	DBEst	2261536
AA521110	DBEst	2261653
AA523639	DBEst	2264567
AA523697	DBEst	2264625
AA528106	DBEst	2270175
AA528190	DBEst	2270259
AA528226	DBEst	2270295
AA534830	DBEst	2279083
AA548722	DBEst	2319004
AA551236	DBEst	2321488
AA551243	DBEst	2321495
AA558778	DBEst	2329255
AA563834	DBEst	2335473
AA576432	DBEst	2353932
AA580069	DBEst	2355396
AA580294	DBEst	2355621
AA582588	DBEst	2359948
AA584304	DBEst	2368913
AA588772	DBEst	2402503
AA593075	DBEst	2408837
AA595585	DBEst	2410935
AA601895	DBEst	2436048
AA628700	DBEst	2541087
AA630326	DBEst	2552937
AA630642	DBEst	2553253
AA631178	DBEst	2553789
AA631218	DBEst	2553829
AA633550	DBEst	2556764
AA634808	DBEst	2558022
AA639199	DBEst	2562978
AA639791	DBEst	2563570
AA644273	DBEst	2569491
AA648897	DBEst	2575326

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ACC NUM	DATABASE	GI NBR
AA664732	DBEst	2619345
AA677550	DBEst	2658072
AA687308	DBEst	2675499
AA705002	DBEst	2714920
AA706685	DBEst	2716603
AA708266	DBEst	2718184
AA713687	DBEst	2725961
AA719618	DBEst	2732717
AA719674	DBEst	2732773
AA720572	DBEst	2736707
AA721752	DBEst	2737814
AA723612	DBEst	2741319
AA730571	DBEst	2751775
AA742282	DBEst	2784282
AA748437	DBEst	2788395
AA749187	DBEst	2789145
AA761602	DBEst	2810532
AA768355	DBEst	2819370
AA769127	DBEst	2820365
AA774030	DBEst	2825919
AA774247	DBEst	2825545
AA779631	DBEst	2838962
AA808747	DBEst	2878153
AA809854	DBEst	2879260
AA810859	DBEst	2880470
AA825673	DBEst	2898985
AA825768	DBEst	2899080
AA826517	DBEst	2898339
AA827331	DBEst	2899772
AA827764	DBEst	2901323
AA829511	DBEst	2902610
AA831603	DBEst	2904702
AA836991	DBEst	2912190
AA837254	DBEst	2912453
AA846480	DBEst	2932620
AA846840	DBEst	2932980
AA853515	DBEst	2940254
AA883212	DBEst	2992742
AA886885	DBEst	3001993
AA889485	DBEst	3016364
AA897461	DBEst	3034081
AA902582	DBEst	3037705
AA902644	DBEst	3037767
AA909144	DBEst	3048549
AA913281	DBEst	3052673
AA916756	DBEst	3056148
AA922420	DBEst	3069729
AA927283	DBEst	3076180
AA933075	DBEst	3087008
AA935979	DBEst	3093136
AA937947	DBEst	3096058
AA948295	DBEst	3109548
AA969131	DBEst	3144311
AA971881	DBEst	3147171
AA973019	DBEst	3148199
AA988923	DBEst	3174494
AA989465	DBEst	3174829
AA994023	DBEst	3180568
AB002310	GenBank	2224564
AB002330	GenBank	2224604
AB007944	GenBank	3413911
AB012911	GenBank	3062802
AB017019	GenBank	4512256

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ACC NUM	DATABASE	GI NBR
AB018266	GenBank	3882166
AB018305	GenBank	3882244
AB018347	GenBank	3882328
AB019568	GenBank	3885371
AB023158	GenBank	4589525
AB028976	GenBank	5689442
AB029005	GenBank	5689500
AC28164	N/A	N/A
AD001528	GenBank	2198556
AF000231	GenBank	2149974
AF006088	GenBank	2282041
AF006516	GenBank	2245670
AF012072	GenBank	2895096
AF026947	GenBank	2736255
AF028832	GenBank	3287488
AF030424	GenBank	2623155
AF031379	GenBank	4894208
AF035287	GenBank	2661040
AF035309	GenBank	2661070
AF038197	GenBank	2795918
AF038404	GenBank	2707904
AF043431	GenBank	3452280
AF044670	GenBank	4191318
AF044958	GenBank	4164447
AF047184	GenBank	2909859
AF052164	GenBank	3360475
AF052496	DBEst	3090893
AF052578	GenBank	2967847
AF054990	GenBank	3005703
AF059524	GenBank	4091867
AF070561	GenBank	3387928
AF070626	GenBank	3283892
AF070655	GenBank	4454685
AF070674	GenBank	3978243
AF075040	GenBank	3377580
AF077030	GenBank	4689107
AF078847	GenBank	5531808
AF080246	GenBank	3406799
AF081282	GenBank	4336324
AF081484	GenBank	3420928
AF084523	GenBank	3550342
AF086163	GenBank	3483508
AF095791	GenBank	3777595
AF100756	GenBank	5410297
AF107406	GenBank	5531905
AF119297	GenBank	4633508
AF131858	GenBank	4406705
AF132940	GenBank	4680650
AF151857	GenBank	4929666
AI028733	DBEst	3246042
AI031901	DBEst	3250113
AI033739	DBEst	3254692
AI040324	DBEst	3279518
AI051172	DBEst	3306706
AI076805	DBEst	3404634
AI087005	DBEst	3425428
AI089913	DBEst	3428972
AI092007	DBEst	3427205
AI127326	DBEst	3595840
AI147251	DBEst	3674933
AI148933	DBEst	3677402
AI149846	DBEst	3678315
AI167855	DBEst	3701025

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ACC NUM	DATABASE	GI NBR
AI183965	DBEst	3734603
AI189258	DBEst	3740467
AI220148	DBEst	3802351
AI224374	DBEst	3807087
AI240095	DBEst	3835492
AI246677	DBEst	3842074
AI248538	DBEst	3843935
AI266582	DBEst	3884740
AI268864	DBEst	3888031
AI270183	DBEst	3889350
AI271795	DBEst	3890962
AI273008	DBEst	3895276
AI273841	DBEst	3896109
AI274756	DBEst	3897030
AI275528	DBEst	3897802
AI283096	DBEst	3921329
AI298059	DBEst	3957795
AI335653	DBEst	4072580
AI338977	DBEst	4075904
AI339946	DBEst	4076873
AI373032	DBEst	4152898
AI374954	DBEst	4174944
AI374954	DBEst	4174944
AI380539	DBEst	4190392
AI417583	DBEst	4261087
AI432644	DBEst	4283347
AI433157	DBEst	4287209
AI457792	DBEst	4310661
AI469112	DBEst	4331202
AI471114	DBEst	4333204
AI471534	DBEst	4333624
AI473927	DBEst	4326972
AI479305	DBEst	4372473
AI499243	DBEst	4391225
AI525796	DBEst	4439931
AI525843	DBEst	4439978
AI537677	DBEst	4451812
AI541029	DBEst	4458402
AI560129	DBEst	4510470
AI583108	DBEst	4569005
AI584068	DBEst	4569965
AI587208	DBEst	4573649
AI589867	DBEst	4598915
AI610676	DBEst	4619843
AI630362	DBEst	4681692
AI633006	DBEst	4684336
AI634443	DBEst	4685773
AI635096	DBEst	4686426
AI682105	DBEst	4892287
AI683338	DBEst	4893520
AI684800	DBEst	4896094
AI684991	DBEst	4896285
AI689369	DBEst	4900663
AI689617	DBEst	4900911
AI689883	DBEst	4901177
AI693745	DBEst	4971085
AI701001	DBEst	4988901
AI733038	DBEst	5054151
AI735638	DBEst	5057162
AI741506	DBEst	5109794
AI742722	DBEst	5111010
AI742738	DBEst	5111026
AI743552	DBEst	5111840

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ACC NUM	DATABASE	GI NBR
AI753784	DBEst	5132136
AI754296	DBEst	5132560
AI754652	DBEst	5132916
AI754732	DBEst	5132996
AI765975	DBEst	5232484
AI769970	DBEst	5236479
AI819225	DBEst	5438304
AI820563	DBEst	5439642
AI827818	DBEst	5448489
AI828682	DBEst	5449353
AI830067	DBEst	5450738
AI861989	DBEst	5526096
AI887129	DBEst	5592293
AI887632	DBEst	5592796
AI890281	DBEst	5595445
AI924046	DBEst	5660010
AI924096	DBEst	5660060
AI924823	DBEst	5660787
AI963471	DBEst	5756184
AI963604	DBEst	5756382
AI972556	DBEst	5769302
AI979048	DBEst	5804078
AI984656	DBEst	5811933
AJ010442	GenBank	3954884
AJ132694	GenBank	4454210
AJ224442	GenBank	2911586
AL036299	DBEst	5405889
AL042979	DBEst	5422409
AL047305	DBEst	4727252
AL049247	GenBank	4499985
AL049313	GenBank	4500086
AL049381	GenBank	4500168
AL049932	GenBank	4884176
AL050041	GenBank	4884283
AL050161	GenBank	4884375
AL050265	GenBank	4886440
AL050268	GenBank	4886442
AL050367	GenBank	4914600
AL079286	GenBank	5102746
AL079312	GenBank	5102890
AL079314	GenBank	5102893
AL080113	GenBank	5262540
AL110164	GenBank	5817069
AL117412	GenBank	5912102
AL117612	GenBank	5912188
AL119009	DBEst	5924908
AW014693	DBEst	5863450
AW014985	DBEst	5863742
AW021794	DBEst	5875324
C01521	DBEst	1433751
D01096	GenBank	220128
D13119	GenBank	285909
D13627	GenBank	286010
D13630	GenBank	286000
D13639	GenBank	285990
D13665	GenBank	393318
D14530	GenBank	414348
D21260	GenBank	434760
D25278	GenBank	434780
D26361	GenBank	452516
D30655	GenBank	485387
D50310	GenBank	1183161
D51497	DBEst	951733

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ACC NUM	DATABASE	GI NBR
D53031	DBEst	954928
D62116	DBEst	965892
D63878	GenBank	961447
D78611	GenBank	1655421
D82348	GenBank	1311461
D83032	GenBank	1374697
D85433	GenBank	1841371
D87437	GenBank	1665768
D87667	GenBank	1620019
D89092	GenBank	2780747
D90041	GenBank	219413
E02628	GenBank	2170856
E05732	GenBank	2173919
F00551	DBEst	707254
H08920	DBEst	873742
H25080	DBEst	893979
H30306	DBEst	901216
H44647	DBEst	920699
H81376	DBEst	1059465
H93521	DBEst	1099849
H94496	DBEst	1102129
J03464	GenBank	179595
J03799	GenBank	186840
J04027	GenBank	950413
J04177	GenBank	179729
K01228	GenBank	180391
K01566	GenBank	187721
L07395	GenBank	190218
L09159	GenBank	307374
L11315	GenBank	403386
L13806	GenBank	306554
L15702	GenBank	291921
L16510	GenBank	291887
L24804	GenBank	438651
L25931	GenBank	438638
L28809	GenBank	454151
M10036	GenBank	339840
M10905	GenBank	182696
M11353	GenBank	184092
M12267	GenBank	189328
M13536	GenBank	180248
M14483	GenBank	339692
M14630	GenBank	339690
M17885	GenBank	190231
M18366	GenBank	179131
M21575	GenBank	1311702
M23254	GenBank	511636
M24194	GenBank	187701
M24486	GenBank	190785
M26512	GenBank	177796
M28372	GenBank	643575
M31159	GenBank	183115
M32220	GenBank	186619
M36341	GenBank	178984
M36693	GenBank	338285
M38690	GenBank	1048988
M58485	GenBank	180154
M59849	GenBank	182591
M62831	GenBank	182260
M64241	GenBank	190813
M69043	GenBank	187290
M77142	GenBank	339700
M77830	GenBank	4689438

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ACC NUM	DATABASE	GI NBR
M86667	GenBank	189066
M88108	GenBank	189499
M93651	GenBank	338038
M95542	GenBank	184271
N43970	DBEst	1182498
Q12759	N/A	N/A
Q14635	N/A	N/A
R11045	DBEst	763780
R76376	DBEst	851058
R84450	DBEst	942856
S74728	GenBank	797409
S82081	GenBank	1488412
T07459	DBEst	318608
T19883	DBEst	597628
T21168	DBEst	2596291
T22605	DBEst	2597187
T37405	DBEst	621222
T67129	DBEst	676569
T69703	DBEst	680851
T78615	DBEst	697124
T89937	DBEst	718450
U03851	GenBank	433307
U12404	GenBank	531170
U14967	GenBank	550014
U14971	GenBank	550022
U20659	GenBank	929920
U25789	GenBank	808089
U30825	GenBank	1049077
U47077	GenBank	9027566
U49844	GenBank	1235901
U63846	GenBank	1480921
U65928	GenBank	1549382
U72516	GenBank	1673521
U79282	GenBank	1710254
U90716	GenBank	1946350
U90904	GenBank	1913882
U94364	GenBank	2618769
V20437	N/A	N/A
V24305	N/A	N/A
V81394	N/A	N/A
V84510	N/A	N/A
W19427	DBEst	1295328
W65357	DBEst	1373499
W75963	DBEst	1386337
W80525	DBEst	1391689
X01630	GenBank	28871
X04098	GenBank	28338
X04408	GenBank	31914
X06700	GenBank	30053
X14420	GenBank	30057
X51742	GenBank	52697
X60111	GenBank	34768
X69398	GenBank	396175
X72755	GenBank	311375
X74979	GenBank	400462
X76180	GenBank	452649
X78627	GenBank	607129
X79067	GenBank	483524
X80910	GenBank	531475
X87949	GenBank	1143491
Y00052	GenBank	30308
Y00062	GenBank	34275
Y00282	GenBank	36048

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ACC_NUM	DATABASE	GI_NBR
Y00503	GenBank	34038
Y15286	GenBank	2584788
Y17171	GenBank	3093333
Z13009	GenBank	31072
Z24724	GenBank	505034
Z29083	GenBank	435654
Z29331	GenBank	483539
Z46606	GenBank	575250
Z48501	GenBank	693936
AA001460	DBEst	1436925
AA001543	DBEst	1437008
AA001792	DBEst	1445606
AA004925	DBEst	1448503
AA010897	DBEst	1471994
AA017162	DBEst	1479361
AA019019	DBEst	1482429
AA022980	DBEst	1487079
AA024595	DBEst	1489500
AA024940	DBEst	1489864
AA024996	DBEst	1489901
AA025750	DBEst	1491134
AA026598	DBEst	1492433
AA029271	DBEst	1496712
AA029725	DBEst	1497138
AA029930	DBEst	1496355
AA033832	DBEst	1505650
AA035471	DBEst	1507128
AA035616	DBEst	1507426
AA036752	DBEst	1509790
AA037377	DBEst	1512540
AA039778	DBEst	1516057
AA039948	DBEst	1516243
AA040688	DBEst	1517002
AA040820	DBEst	1517098
AA041259	DBEst	1517683
AA043477	DBEst	1521333
AA044209	DBEst	1522066
AA044233	DBEst	1522109
AA044791	DBEst	1522994
AA045054	DBEst	1523256
AA045147	DBEst	1523487
AA045768	DBEst	1525870
AA046848	DBEst	1524747
AA053021	DBEst	1544277
AA053316	DBEst	1545775
AA053919	DBEst	1544863
AA054069	DBEst	1545012
AA055479	DBEst	1547884
AA055591	DBEst	1547956
AA055637	DBEst	1547976
AA057243	DBEst	1550096
AA058712	DBEst	1551520
AA059128	DBEst	1552146
AA065169	DBEst	1559064
AA069850	DBEst	1577210
AA071167	DBEst	1578528
AA075158	DBEst	1615214
AA075515	DBEst	1615385
AA075663	DBEst	1615533
AA076397	DBEst	1616448
AA076421	DBEst	1616290
AA078387	DBEst	1837861
AA078570	DBEst	1838051

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ACC NUM	DATABASE	GI NBR
AA078872	DBEst	1617825
AA079480	DBEst	1618390
AA080889	DBEst	1623378
AA081073	DBEst	1622991
AA081608	DBEst	1623666
AA081834	DBEst	1623893
AA081917	DBEst	1623975
AA082258	DBEst	1624341
AA082441	DBEst	1624498
AA083270	DBEst	1625391
AA083345	DBEst	1625405
AA083522	DBEst	1625582
AA083573	DBEst	1625633
AA083638	DBEst	1625697
AA083774	DBEst	1625832
AA088318	DBEst	1633822
AA088344	DBEst	1633856
AA088351	DBEst	1633889
AA088693	DBEst	1634214
AA088783	DBEst	1634295
AA088829	DBEst	1634323
AA090106	DBEst	1636590
AA096032	DBEst	1641617
AA099819	DBEst	1645918
AA099923	DBEst	1646071
AA099976	DBEst	1646109
AA100764	DBEst	1647117
AA101010	DBEst	1647531
AA102013	DBEst	1645759
AA102564	DBEst	1647756
AA102830	DBEst	1648675
AA112186	DBEst	1664473
AA112645	DBEst	1665346
AA113305	DBEst	1665010
AA115218	DBEst	1670047
AA115315	DBEst	1670632
AA121656	DBEst	1679269
AA121718	DBEst	1679447
AA125809	DBEst	1688020
AA125939	DBEst	1687931
AA126452	DBEst	1686119
AA126718	DBEst	1686236
AA127436	DBEst	1686832
AA127666	DBEst	1686935
AA128063	DBEst	1687342
AA128636	DBEst	1688579
AA128641	DBEst	1688584
AA130778	DBEst	1692444
AA130982	DBEst	1692473
AA131827	DBEst	1693380
AA132056	DBEst	1693545
AA132163	DBEst	1693672
AA132574	DBEst	1694081
AA132992	DBEst	1694561
AA133351	DBEst	1690319
AA133474	DBEst	1690442
AA134460	DBEst	1692042
AA134527	DBEst	1692092
AA134589	DBEst	1695586
AA135696	DBEst	1696707
AA137017	DBEst	1698226
AA142941	DBEst	1712319
AA143001	DBEst	1712506

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ACC NUM	DATABASE	GI NBR
AA143074	DBEst	1712578
AA143746	DBEst	1713134
AA146900	DBEst	1716290
AA147200	DBEst	1716573
AA147247	DBEst	1716883
AA147781	DBEst	1717161
AA148027	DBEst	1717451
AA148136	DBEst	1717510
AA149810	DBEst	1720917
AA150377	DBEst	1721908
AA150837	DBEst	1722412
AA150928	DBEst	1722439
AA151274	DBEst	1719600
AA151594	DBEst	1720081
AA151755	DBEst	1720310
AA152476	DBEst	1718704
AA155754	DBEst	1727371
AA156066	DBEst	1727700
AA157163	DBEst	1728787
AA157993	DBEst	1732804
AA158738	DBEst	1733549
AA159110	DBEst	1733921
AA159576	DBEst	1735127
AA161003	DBEst	1735290
AA161076	DBEst	1735364
AA161467	DBEst	1735906
AA164193	DBEst	1741344
AA164473	DBEst	1740650
AA164729	DBEst	1740889
AA164873	DBEst	1741032
AA165027	DBEst	1740273
AA165068	DBEst	1740296
AA165087	DBEst	1740315
AA165174	DBEst	1740402
AA165282	DBEst	1740510
AA165293	DBEst	1740521
AA165638	DBEst	1741671
AA166618	DBEst	1745207
AA167041	DBEst	1745434
AA167750	DBEst	1744900
AA171630	DBEst	1750889
AA173506	DBEst	1753638
AA174097	DBEst	1754302
AA179187	DBEst	1760556
AA180137	DBEst	1761403
AA180224	DBEst	1761553
AA180383	DBEst	1761692
AA181075	DBEst	1764592
AA181258	DBEst	1764785
AA181684	DBEst	1765213
AA182415	DBEst	1766238
AA182540	DBEst	1766256
AA186577	DBEst	1774676
AA187817	DBEst	1774011
AA188045	DBEst	1774295
AA188140	DBEst	1774332
AA188384	DBEst	1775418
AA188826	DBEst	1775853
AA190873	DBEst	1779393
AA191422	DBEst	1780101
AA192094	DBEst	1782111
AA193308	DBEst	1782719
AA194577	DBEst	1784338

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ACC NUM	DATABASE	GI NBR
AA195246	DBEst	1784946
AA195865	DBEst	1791530
AA196424	DBEst	1791999
AA196982	DBEst	1792573
AA203691	DBEst	1799458
AA204867	DBEst	1802927
AA206578	DBEst	1801958
AA206991	DBEst	1801246
AA209508	DBEst	1807460
AA216753	DBEst	1817452
AA219665	DBEst	1833722
AA223121	DBEst	1843680
AA223820	DBEst	1844362
AA224109	DBEst	1844668
AA224407	DBEst	1845029
AA227118	DBEst	1848672
AA229325	DBEst	1851167
AA229611	DBEst	1851608
AA232959	DBEst	1855951
AA233835	DBEst	1856856
AA233843	DBEst	1856920
AA234092	DBEst	1858897
AA234307	DBEst	1858618
AA236776	DBEst	1860841
AA242985	DBEst	1873780
AA243338	DBEst	1874149
AA244342	DBEst	1875177
AA249154	DBEst	1879783
AA255502	DBEst	1892406
AA256591	DBEst	1892130
AA261990	DBEst	1897971
AA262939	DBEst	1898659
AA278445	DBEst	1919782
AA278482	DBEst	1919801
AA278642	DBEst	1919962
AA278956	DBEst	1920495
AA279048	DBEst	1920577
AA280099	DBEst	1921573
AA280221	DBEst	1921759
AA280828	DBEst	1923508
AA282915	DBEst	1925910
AA284334	DBEst	1928614
AA284555	DBEst	1927484
AA284670	DBEst	1927581
AA284671	DBEst	1927582
AA284870	DBEst	1927464
AA284906	DBEst	1927448
AA285290	DBEst	1929600
AA286699	DBEst	1933581
AA286872	DBEst	1933932
AA287219	DBEst	1934280
AA287642	DBEst	1933325
AA287815	DBEst	1933514
AA291438	DBEst	1939417
AA291485	DBEst	1939506
AA291971	DBEst	1940027
AA292334	DBEst	1940314
AA293127	DBEst	1941167
AA293133	DBEst	1941173
AA293273	DBEst	1941423
AA293286	DBEst	1941377
AA293353	DBEst	1940750
AA293572	DBEst	1941239

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ACC NUM	DATABASE	GI NBR
AA293629	DBEst	1941280
AA293759	DBEst	1941542
AA293804	DBEst	1941727
AA296780	DBEst	1949277
AA297402	DBEst	1949735
AA298505	DBEst	1950908
AA299640	DBEst	1951971
AA301062	DBEst	1953433
AA301800	DBEst	1954133
AA303461	DBEst	1955795
AA303568	DBEst	1955901
AA306718	DBEst	1959046
AA306862	DBEst	1959190
AA306876	DBEst	1959204
AA307198	DBEst	1959526
AA307325	DBEst	1959653
AA308065	DBEst	1960394
AA308274	DBEst	1960673
AA308744	DBEst	1961143
AA310739	DBEst	1963088
AA310771	DBEst	1963242
AA311228	DBEst	1963628
AA311460	DBEst	1963786
AA311571	DBEst	1964055
AA311801	DBEst	1964150
AA311848	DBEst	1964177
AA311905	DBEst	1964306
AA312218	DBEst	1964618
AA312240	DBEst	1964578
AA312435	DBEst	1964763
AA313108	DBEst	1965456
AA313223	DBEst	1965552
AA313653	DBEst	1965983
AA313994	DBEst	1966555
AA314431	DBEst	1966760
AA314872	DBEst	1967221
AA315363	DBEst	1967742
AA315379	DBEst	1967707
AA317243	DBEst	1969570
AA317393	DBEst	1969772
AA318969	DBEst	1971371
AA327201	DBEst	1979467
AA331991	DBEst	1984254
AA332672	DBEst	1984936
AA333358	DBEst	1985601
AA335273	DBEst	1987516
AA336666	DBEst	1988905
AA337192	DBEst	1989429
AA337489	DBEst	1989954
AA338793	DBEst	1991103
AA339957	DBEst	1992224
AA340341	DBEst	1992579
AA341446	DBEst	1993684
AA341465	DBEst	1993733
AA342969	DBEst	1995205
AA343629	DBEst	1995868
AA344084	DBEst	1996321
AA345329	DBEst	1997564
AA346393	DBEst	1998631
AA346698	DBEst	1999168
AA347887	DBEst	2000122
AA350059	DBEst	2002398
AA351507	DBEst	2003827

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ACC NUM	DATABASE	GI NBR
AA355003	DBEst	2007559
AA356682	DBEst	2009000
AA357574	DBEst	2009894
AA358887	DBEst	2011207
AA359705	DBEst	2012096
AA364352	DBEst	2016692
AA367451	DBEst	2019769
AA367773	DBEst	2020090
AA368542	DBEst	2021085
AA369400	DBEst	2021719
AA373230	DBEst	2025550
AA374754	DBEst	2027074
AA375312	DBEst	2027642
AA375815	DBEst	2028133
AA393525	DBEst	2046493
AA394115	DBEst	2047129
AA398443	DBEst	2051755
AA398585	DBEst	2051827
AA398739	DBEst	2051861
AA399165	DBEst	2052960
AA399628	DBEst	2052642
AA401329	DBEst	2053554
AA401334	DBEst	2053559
AA402191	DBEst	2056138
AA402289	DBEst	2056202
AA402775	DBEst	2056528
AA403319	DBEst	2056820
AA404613	DBEst	2058825
AA405124	DBEst	2063536
AA406239	DBEst	2064220
AA410580	DBEst	2069686
AA410982	DBEst	2070088
AA411021	DBEst	2070171
AA411252	DBEst	2068793
AA411764	DBEst	2070352
AA417794	DBEst	2079604
AA419263	DBEst	2078976
AA419284	DBEst	2079014
AA420751	DBEst	2094630
AA420758	DBEst	2094637
AA421248	DBEst	2100135
AA421682	DBEst	2100499
AA422060	DBEst	2100893
AA422143	DBEst	2101011
AA425004	DBEst	2107073
AA425468	DBEst	2106322
AA425737	DBEst	2107249
AA429794	DBEst	2113001
AA430400	DBEst	2110974
AA430436	DBEst	2110992
AA431428	DBEst	2115136
AA433988	DBEst	2138902
AA436315	DBEst	2141229
AA436411	DBEst	2141325
AA443024	DBEst	2155699
AA449394	DBEst	2162785
AA451779	DBEst	2165448
AA453878	DBEst	2167547
AA454668	DBEst	2177444
AA454953	DBEst	2177729
AA454962	DBEst	2177738
AA455245	DBEst	2178021
AA455785	DBEst	2178561

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ACC NUM	DATABASE	GI NBR
AA456454	DBEst	2179030
AA456557	DBEst	2179133
AA457255	DBEst	2179975
AA457579	DBEst	2180299
AA459167	DBEst	2184074
AA459210	DBEst	2184117
AA459527	DBEst	2184434
AA460570	DBEst	2185690
AA460816	DBEst	2185936
AA461005	DBEst	2186125
AA468657	DBEst	2195191
AA469447	DBEst	2194242
AA469453	DBEst	2194248
AA476522	DBEst	2204733
AA477018	DBEst	2205229
AA477567	DBEst	2206201
AA477973	DBEst	2206607
AA478230	DBEst	2206864
AA479646	DBEst	2205532
AA479648	DBEst	2205534
AA479848	DBEst	2205734
AA481078	DBEst	2210630
AA481710	DBEst	2211262
AA482430	DBEst	2210108
AA482432	DBEst	2210110
AA482779	DBEst	2211624
AA483258	DBEst	2212071
AA483726	DBEst	2212539
AA483858	DBEst	2212671
AA484181	DBEst	2212994
AA486047	DBEst	2216263
AA486859	DBEst	2217023
AA488141	DBEst	2215572
AA488385	DBEst	2215816
AA488517	DBEst	2215948
AA489323	DBEst	2218925
AA489380	DBEst	2218982
AA489382	DBEst	2218984
AA491204	DBEst	2220377
AA492143	DBEst	2221705
AA493371	DBEst	2223212
AA494321	DBEst	2224108
AA494552	DBEst	2224339
AA501657	DBEst	2236624
AA502136	DBEst	2237103
AA505780	DBEst	2241917
AA512933	DBEst	2251356
AA514395	DBEst	2253995
AA514974	DBEst	2254574
AA515143	DBEst	2254743
AA516376	DBEst	2253738
AA521006	DBEst	2261549
AA523522	DBEst	2264234
AA524748	DBEst	2265676
AA524950	DBEst	2265878
AA525141	DBEst	2266069
AA526028	DBEst	2268097
AA527275	DBEst	2269344
AA527557	DBEst	2269626
AA533506	DBEst	2277602
AA534349	DBEst	2278602
AA534586	DBEst	2278839
AA534608	DBEst	2278861

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ACC NUM	DATABASE	GI NBR
AA535496	DBEst	2279749
AA541651	DBEst	2288085
AA548056	DBEst	2318338
AA548600	DBEst	2318882
AA550854	DBEst	2321106
AA550855	DBEst	2321107
AA551351	DBEst	2321603
AA551391	DBEst	2321643
AA554437	DBEst	2324976
AA554735	DBEst	2325274
AA555102	DBEst	2325641
AA564272	DBEst	2335911
AA564870	DBEst	2336509
AA565420	DBEst	2337059
AA568936	DBEst	2341990
AA569816	DBEst	2343796
AA569851	DBEst	2343831
AA569916	DBEst	2343896
AA573761	DBEst	2348276
AA573787	DBEst	2348302
AA577537	DBEst	2355011
AA578881	DBEst	2357065
AA579591	DBEst	2357775
AA579890	DBEst	2355217
AA580835	DBEst	2358607
AA582093	DBEst	2360771
AA582866	DBEst	2360226
AA583055	DBEst	2360415
AA583498	DBEst	2368107
AA583567	DBEst	2368176
AA583773	DBEst	2368382
AA584921	DBEst	2367701
AA586755	DBEst	2397569
AA587140	DBEst	2397954
AA587315	DBEst	2398129
AA587873	DBEst	2402048
AA593983	DBEst	2409333
AA594366	DBEst	2409716
AA595624	DBEst	2410974
AA595771	DBEst	2411121
AA599454	DBEst	2433079
AA600227	DBEst	2433852
AA600771	DBEst	2434396
AA601172	DBEst	2434797
AA602395	DBEst	2436373
AA602871	DBEst	2436805
AA603125	DBEst	2436986
AA603177	DBEst	2437038
AA604324	DBEst	2445233
AA604853	DBEst	2445717
AA610279	DBEst	2458707
AA610476	DBEst	2458904
AA610734	DBEst	2459162
AA614482	DBEst	2466678
AA628536	DBEst	2540923
AA628547	DBEst	2540934
AA630611	DBEst	2553222
AA631326	DBEst	2553937
AA633909	DBEst	2557123
AA634260	DBEst	2557474
AA634298	DBEst	2557512
AA640505	DBEst	2565755
AA641289	DBEst	2566539

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ACC NUM	DATABASE	GI NBR
AA644625	DBEst	2569843
AA648944	DBEst	2575373
AA651720	DBEst	2583372
AA652478	DBEst	2584130
AA652505	DBEst	2584157
AA653775	DBEst	2589929
AA658374	DBEst	2594528
AA663005	DBEst	2616996
AA669154	DBEst	2630653
AA677560	DBEst	2658082
AA677750	DBEst	2658272
AA678185	DBEst	2658707
AA678251	DBEst	2658773
AA687495	DBEst	2675686
AA703208	DBEst	2706321
AA703667	DBEst	2713585
AA703907	DBEst	2713825
AA704208	DBEst	2714126
AA706347	DBEst	2716265
AA714010	DBEst	2726284
AA715984	DBEst	2728258
AA716651	DBEst	2728925
AA719530	DBEst	2732629
AA721642	DBEst	2736625
AA729381	DBEst	2750740
AA731946	DBEst	2753897
AA736817	DBEst	2768051
AA742713	DBEst	2782219
AA743278	DBEst	2782784
AA744681	DBEst	2783445
AA745953	DBEst	2785939
AA759195	DBEst	2807058
AA767779	DBEst	2818794
AA769697	DBEst	2820935
AA773998	DBEst	2825887
AA775058	DBEst	2834392
AA776593	DBEst	2835927
AA777384	DBEst	2836715
AA778672	DBEst	2838003
AA779949	DBEst	2839280
AA781487	DBEst	2840818
AA788907	DBEst	2849027
AA806278	DBEst	2875028
AA806735	DBEst	2875485
AA808769	DBEst	2878175
AA810149	DBEst	2879555
AA811609	DBEst	2881220
AA813604	DBEst	2882289
AA826307	DBEst	2899619
AA833766	DBEst	2908534
AA833900	DBEst	2907499
AA837457	DBEst	2912656
AA843531	DBEst	2930049
AA845737	DBEst	2931877
AA846698	DBEst	2932838
AA846856	DBEst	2932996
AA852896	DBEst	2939635
AA856902	DBEst	2945204
AA857824	DBEst	2946126
AA857882	DBEst	2946184
AA861665	DBEst	2953805
AA865960	DBEst	2958236
AA868529	DBEst	2963974

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ACC NUM	DATABASE	GI NBR
AA873271	DBEst	2969393
AA877189	DBEst	2986266
AA884922	DBEst	2994903
AA886453	DBEst	3001561
AA906652	DBEst	3042238
AA906865	DBEst	3042109
AA918993	DBEst	3058883
AA926926	DBEst	3075823
AA928934	DBEst	3078291
AA932501	DBEst	3087282
AA933987	DBEst	3090255
AA935947	DBEst	3093104
AA937302	DBEst	3095413
AA937773	DBEst	3095884
AA947835	DBEst	3109088
AA954939	DBEst	3118634
AA962587	DBEst	3134751
AA962632	DBEst	3134796
AA972525	DBEst	3145289
AA976489	DBEst	3152281
AA983380	DBEst	3161905
AA984586	DBEst	3163111
AA992596	DBEst	3179352
AB002305	GenBank	2224554
AB002330	GenBank	2224604
AB002357	GenBank	2224658
AB002806	GenBank	2780782
AB003476	GenBank	2081606
AB004066	GenBank	2308996
AB006077	GenBank	2564010
AB006534	GenBank	2924619
AB006755	GenBank	2979417
AB007867	GenBank	2662094
AB007900	GenBank	2662160
AB007916	GenBank	6683704
AB007923	GenBank	3413869
AB007957	GenBank	3413931
AB011103	GenBank	3043585
AB011143	GenBank	3043665
AB011151	GenBank	3043681
AB011166	GenBank	3043711
AB014533	GenBank	3327079
AB014542	GenBank	3327097
AB014560	GenBank	3327133
AB015630	GenBank	4586837
AB015856	GenBank	3953530
AB018281	GenBank	3882196
AB018284	GenBank	3882202
AB018285	GenBank	3882204
AB018289	GenBank	3882212
AB018305	GenBank	3882244
AB018327	GenBank	3882288
AB018331	GenBank	3882296
AB018337	GenBank	3882308
AB019409	GenBank	4587128
AB019563	GenBank	3885366
AB019568	GenBank	3885371
AB019691	GenBank	5051742
AB020682	GenBank	4240238
AB020718	GenBank	4240310
AB021288	GenBank	4038732
AB023154	GenBank	4589517
AB023219	GenBank	4589647

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ACC NUM	DATABASE	GI NBR
AB024704	GenBank	4589928
AB027467	GenBank	6172222
AB028069	GenBank	4996095
AB028624	GenBank	5103045
AB028969	GenBank	5689428
AB028986	GenBank	5689462
AB029000	GenBank	5689490
AB029004	GenBank	5689498
AB029028	GenBank	5689546
AC03044	N/A	N/A
AC31479	N/A	N/A
AF000670	GenBank	3153911
AF000974	GenBank	2232135
AF001893	GenBank	2529723
AF004562	GenBank	3041872
AF006043	GenBank	2674061
AF007135	GenBank	2852610
AF007151	GenBank	2852629
AF007170	GenBank	2865251
AF009615	GenBank	2393946
AF013759	GenBank	3153208
AF013988	GenBank	2318114
AF015283	GenBank	2384720
AF015767	GenBank	2353176
AF016507	GenBank	2909776
AF016582	GenBank	2367668
AF017790	GenBank	2501872
AF019767	GenBank	3510461
AF021351	GenBank	2460207
AF021819	GenBank	2460317
AF022229	GenBank	2809382
AF023266	GenBank	4103447
AF025439	GenBank	2815605
AF026166	GenBank	4090928
AF026939	GenBank	2612967
AF027205	GenBank	2598967
AF031385	GenBank	2606093
AF034607	GenBank	4426566
AF035286	GenBank	2661038
AF035309	GenBank	2661070
AF035313	GenBank	2661075
AF037204	GenBank	2906012
AF038661	GenBank	3132897
AF039019	GenBank	2828109
AF039291	GenBank	4104738
AF039843	GenBank	2809399
AF040990	GenBank	2804783
AF041483	GenBank	3493528
AF042385	GenBank	2828148
AF042729	GenBank	7770717
AF044588	GenBank	2865520
AF045184	GenBank	3417598
AF047438	GenBank	3335131
AF047472	GenBank	2921872
AF048977	GenBank	3005586
AF050171	GenBank	5668577
AF050199	GenBank	2961556
AF050639	GenBank	4164453
AF052124	GenBank	3360431
AF052135	GenBank	3360444
AF052149	GenBank	3360459
AF052164	GenBank	3360475
AF052169	GenBank	3360480

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ACC NUM	DATABASE	GI NBR
AF052180	GenBank	3360492
AF052514	GenBank	3510662
AF054183	GenBank	4092053
AF054187	GenBank	4092059
AF054840	GenBank	2997744
AF055012	GenBank	3005735
AF055033	GenBank	3005763
AF057299	GenBank	5739040
AF059252	GenBank	3372629
AF061258	GenBank	3108092
AF062318	GenBank	3152814
AF063611	GenBank	4731856
AF064019	GenBank	3347856
AF068235	GenBank	4321975
AF068846	GenBank	3201999
AF070523	GenBank	3764088
AF070537	GenBank	3387894
AF070555	GenBank	3387920
AF070561	GenBank	3387928
AF070596	GenBank	3387973
AF070600	GenBank	3387979
AF070626	GenBank	3283892
AF070649	GenBank	3283923
AF070662	GenBank	4454699
AF070672	GenBank	3978239
AF071202	GenBank	3335172
AF071219	GenBank	3288867
AF071593	GenBank	3249712
AF073298	GenBank	3641537
AF075587	GenBank	3319325
AF077030	GenBank	4689107
AF077045	GenBank	4689137
AF077200	GenBank	4679013
AF077202	GenBank	4679017
AF077207	GenBank	4679027
AF081192	GenBank	3420798
AF081484	GenBank	3420928
AF083190	GenBank	3599414
AF085355	GenBank	5114044
AF086003	GenBank	3483348
AF086116	GenBank	3483461
AF086178	GenBank	3483523
AF086205	GenBank	3483550
AF086207	GenBank	3483552
AF086336	GenBank	3483681
AF086517	GenBank	3483862
AF087135	GenBank	3641297
AF087990	GenBank	3523196
AF088036	GenBank	3523242
AF091076	GenBank	3859989
AF092563	GenBank	3851583
AF095287	GenBank	3766235
AF095791	GenBank	3777595
AF097709	GenBank	3777616
AF100741	GenBank	5138992
AF100756	GenBank	5410297
AF100928	GenBank	4323586
AF104222	GenBank	3983426
AF104913	GenBank	3941723
AF104923	GenBank	4680483
AF107405	GenBank	5531903
AF120334	GenBank	4191615
AF124438	GenBank	4838431

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ACC NUM	DATABASE	GI NBR
AF124439	GenBank	4838433
AF125525	GenBank	4689281
AF131799	GenBank	4406628
AF131814	GenBank	4406648
AF139461	GenBank	4894945
AF139658	GenBank	4894940
AF144755	GenBank	5006628
AF147331	GenBank	4761682
AF150962	GenBank	5020252
AF151832	GenBank	4929616
AF151868	GenBank	4929688
AF151898	GenBank	4929748
AF151907	GenBank	4929766
AF152097	GenBank	4929772
AF159295	GenBank	5714635
AF176702	GenBank	6103642
AF190744	GenBank	6176531
AI004664	DBEst	3214174
AI004915	DBEst	3214425
AI016073	DBEst	3230409
AI016323	DBEst	3230659
AI016791	DBEst	3231127
AI018451	DBEst	3232970
AI018625	DBEst	3233144
AI022779	DBEst	3238020
AI023799	DBEst	3238843
AI026164	DBEst	3241777
AI027516	DBEst	3246446
AI031636	DBEst	3249848
AI033037	DBEst	3253990
AI034115	DBEst	3255068
AI037859	DBEst	3277053
AI041670	DBEst	3280864
AI042034	DBEst	3281228
AI042290	DBEst	3281484
AI051971	DBEst	3307962
AI056917	DBEst	3330706
AI057124	DBEst	3331000
AI066419	DBEst	3367121
AI078041	DBEst	3412449
AI081116	DBEst	3417908
AI081472	DBEst	3418264
AI081913	DBEst	3418705
AI082244	DBEst	3419036
AI082648	DBEst	3419440
AI084731	DBEst	3423154
AI085381	DBEst	3423804
AI087291	DBEst	3425714
AI087819	DBEst	3426852
AI088178	DBEst	3427256
AI089981	DBEst	3429040
AI090524	DBEst	3429583
AI090623	DBEst	3429682
AI091425	DBEst	3430484
AI092971	DBEst	3431947
AI095477	DBEst	3434453
AI123229	DBEst	3538995
AI125642	DBEst	3594156
AI125874	DBEst	3594388
AI127013	DBEst	3595527
AI127556	DBEst	3596070
AI140291	DBEst	3647748
AI141130	DBEst	3648587

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ACC NUM	DATABASE	GI NBR
AI141847	DBEst	3649304
AI143899	DBEst	3665708
AI144100	DBEst	3665909
AI148251	DBEst	3675933
AI149429	DBEst	3677898
AI149592	DBEst	3678061
AI186028	DBEst	3736666
AI186042	DBEst	3736680
AI190341	DBEst	3741550
AI192367	DBEst	3743576
AI192629	DBEst	3743838
AI198930	DBEst	3751536
AI216969	DBEst	3789623
AI217003	DBEst	3789657
AI223292	DBEst	3805495
AI241706	DBEst	3837103
AI251743	DBEst	3848272
AI252466	DBEst	3848995
AI253330	DBEst	3850451
AI253335	DBEst	3850456
AI253338	DBEst	3850459
AI253375	DBEst	3850496
AI253379	DBEst	3850500
AI253436	DBEst	3850391
AI262380	DBEst	3870583
AI263674	DBEst	3871877
AI267162	DBEst	3886329
AI267185	DBEst	3886352
AI267209	DBEst	3886376
AI267289	DBEst	3886456
AI267307	DBEst	3886474
AI267321	DBEst	3886488
AI267454	DBEst	3886621
AI267502	DBEst	3886669
AI268293	DBEst	3887460
AI269060	DBEst	3888227
AI269369	DBEst	3888536
AI270183	DBEst	3889350
AI270472	DBEst	3889639
AI271786	DBEst	3890953
AI272827	DBEst	3895095
AI274047	DBEst	3896315
AI276341	DBEst	3898615
AI276839	DBEst	3899113
AI278611	DBEst	3916845
AI280022	DBEst	3918255
AI283548	DBEst	3921781
AI288965	DBEst	3931274
AI290565	DBEst	3933339
AI291683	DBEst	3934457
AI292286	DBEst	3935060
AI298472	DBEst	3958208
AI298941	DBEst	3958595
AI304857	DBEst	3988546
AI308959	DBEst	4003830
AI312552	DBEst	4018157
AI333055	DBEst	4069614
AI333116	DBEst	4069675
AI335249	DBEst	4072176
AI336326	DBEst	4073253
AI345325	DBEst	4082531
AI366549	DBEst	4126238
AI366549	DBEst	4126238

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ACC NUM	DATABASE	GI NBR
AI367850	DBEst	4137595
AI375624	DBEst	4175614
AI375624	DBEst	4175614
AI376561	DBEst	4186410
AI399636	DBEst	4242723
AI417384	DBEst	4260888
AI421720	DBEst	4267651
AI424841	DBEst	4270772
AI431507	DBEst	4303669
AI433180	DBEst	4287371
AI434084	DBEst	4293703
AI434401	DBEst	4295922
AI436016	DBEst	4307232
AI436448	DBEst	4281781
AI446503	DBEst	4295666
AI453199	DBEst	4308687
AI459028	DBEst	4311607
AI469237	DBEst	4331327
AI492520	DBEst	4393523
AI492769	DBEst	4393772
AI494344	DBEst	4395347
AI523940	DBEst	4438075
AI524677	DBEst	4438812
AI538682	DBEst	4452817
AI557059	DBEst	4489422
AI561260	DBEst	4511601
AI567988	DBEst	4526440
AI569715	DBEst	4533089
AI581291	DBEst	4565667
AI583211	DBEst	4569108
AI583570	DBEst	4569467
AI589301	DBEst	4598349
AI597938	DBEst	4606986
AI608591	DBEst	4617758
AI608787	DBEst	4617954
AI608968	DBEst	4618135
AI609193	DBEst	4618360
AI609281	DBEst	4618448
AI623804	DBEst	4648735
AI628689	DBEst	4665489
AI636635	DBEst	4687965
AI650837	DBEst	4734816
AI654096	DBEst	4738075
AI660245	DBEst	4763815
AI669253	DBEst	4834027
AI670084	DBEst	4834858
AI674313	DBEst	4874793
AI678152	DBEst	4888334
AI678703	DBEst	4888885
AI679044	DBEst	4889226
AI679321	DBEst	4889503
AI683140	DBEst	4893322
AI683338	DBEst	4893520
AI683793	DBEst	4893975
AI688798	DBEst	4900092
AI692866	DBEst	4970206
AI694087	DBEst	4971427
AI696819	DBEst	4984719
AI697501	DBEst	4985401
AI734922	DBEst	5056446
AI735069	DBEst	5056668
AI739337	DBEst	5101318
AI739377	DBEst	5101358

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ACC NUM	DATABASE	GI NBR
AI743595	DBEst	5111883
AI743691	DBEst	5111979
AI750198	DBEst	5128462
AI750909	DBEst	5129173
AI751119	DBEst	5129306
AI751364	DBEst	5129628
AI751565	DBEst	5129829
AI752319	DBEst	5130583
AI752553	DBEst	5130817
AI752929	DBEst	5131193
AI753108	DBEst	5131372
AI753671	DBEst	5131935
AI754437	DBEst	5132701
AI755181	DBEst	5133445
AI758869	DBEst	5152594
AI761927	DBEst	5177594
AI763126	DBEst	5178793
AI791906	DBEst	5339622
AI793120	DBEst	5340836
AI799521	DBEst	5364993
AI804346	DBEst	5369818
AI808109	DBEst	5394597
AI811021	DBEst	5397587
AI811845	DBEst	5398411
AI814139	DBEst	5425354
AI814674	DBEst	5425889
AI815868	DBEst	5431414
AI822030	DBEst	5441109
AI827641	DBEst	5448312
AI859619	DBEst	5513235
AI864580	DBEst	5528687
AI878968	DBEst	5553017
AI879179	DBEst	5553228
AI879367	DBEst	5553416
AI879992	DBEst	5554041
AI888377	DBEst	5593464
AI911704	DBEst	5631559
AI911997	DBEst	5631852
AI912084	DBEst	5631939
AI916284	DBEst	5636229
AI916584	DBEst	5636439
AI923224	DBEst	5659188
AI924096	DBEst	5660060
AI928185	DBEst	5664149
AI929819	DBEst	5665783
AI936748	DBEst	5675618
AI950087	DBEst	5742397
AI955808	DBEst	5748118
AJ001258	GenBank	2769648
AJ002030	GenBank	2570006
AJ006026	GenBank	3127893
AJ011001	GenBank	4456466
AJ011915	GenBank	3757675
AJ012499	GenBank	5441359
AJ223183	GenBank	3925598
AL035802	DBEst	5927582
AL035987	DBEst	5405617
AL036801	DBEst	5927917
AL037646	DBEst	5928237
AL038985	DBEst	5408101
AL039150	DBEst	5408232
AL041780	DBEst	5421127
AL044019	DBEst	5432247

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ACC NUM	DATABASE	GI NBR
AL046804	DBEst	5434866
AL049055	DBEst	4728364
AL049227	GenBank	4499957
AL049229	GenBank	4499961
AL049296	GenBank	4500057
AL049464	GenBank	4500256
AL049953	GenBank	4884201
AL049954	GenBank	4884203
AL049955	GenBank	4884205
AL049959	GenBank	4884211
AL049987	GenBank	4884238
AL049999	GenBank	4884252
AL050011	GenBank	4884080
AL050089	GenBank	4884107
AL050141	GenBank	4884352
AL050171	GenBank	4884383
AL050187	GenBank	4884402
AL050198	GenBank	4884436
AL050217	GenBank	4884458
AL050392	GenBank	4914613
AL080062	GenBank	5262466
AL080186	GenBank	5262664
AL080235	GenBank	5262728
AL096857	GenBank	5541862
AL096858	GenBank	5541864
AL110197	GenBank	5817115
AL110235	GenBank	5817176
AL117237	GenBank	5834563
AL117499	GenBank	5912003
AL117534	GenBank	5912062
AL118999	DBEst	5924898
AL119085	DBEst	5924984
AL119157	DBEst	5925056
AW020479	DBEst	5874009
AW044114	DBEst	5904643
AW102841	DBEst	6073454
C02094	DBEst	1434324
C16886	DBEst	1571593
C18886	DBEst	1580488
D00017	GenBank	219909
D00022	GenBank	219653
D00068	GenBank	220080
D00099	GenBank	219941
D00422	GenBank	220063
D10495	GenBank	520586
D13119	GenBank	285909
D13287	GenBank	496370
D13665	GenBank	393318
D13866	GenBank	433410
D14662	GenBank	285948
D14697	GenBank	285964
D14710	GenBank	559324
D14812	GenBank	285968
D15049	GenBank	475003
D16431	GenBank	598955
D16937	GenBank	598856
D17188	GenBank	598702
D17268	GenBank	598899
D17409	GenBank	2335046
D17793	GenBank	457407
D21063	GenBank	434752
D23660	GenBank	432358
D25542	GenBank	662389

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ACC NUM	DATABASE	GI NBR
D28759	GenBank	633074
D29677	GenBank	473938
D31767	GenBank	505091
D31784	GenBank	974184
D31883	GenBank	505093
D31890	GenBank	505107
D37991	GenBank	1019367
D38491	GenBank	559327
D38583	GenBank	560790
D43948	GenBank	603950
D43950	GenBank	603954
D45248	GenBank	1008914
D45887	GenBank	665587
D45915	GenBank	1483130
D49489	GenBank	1136742
D49547	GenBank	710654
D50310	GenBank	1183161
D50371	GenBank	2605591
D55192	DBEst	957089
D55649	GenBank	1132478
D56120	DBEst	970603
D59253	GenBank	1060898
D78586	GenBank	1228048
D79826	DBEst	1180177
D79983	GenBank	1136383
D79986	GenBank	1136389
D79997	GenBank	1136409
D80006	GenBank	1136427
D80012	GenBank	1136437
D80087	DBEst	1177964
D80253	DBEst	1178130
D81635	DBEst	1179512
D82128	DBEst	1183520
D82348	GenBank	1311461
D83197	GenBank	3893154
D83327	GenBank	2687860
D83784	GenBank	1663695
D86227	GenBank	2081619
D87437	GenBank	1665768
D87442	GenBank	1665772
D87470	GenBank	1665822
D87666	GenBank	1620016
D87667	GenBank	1620019
D87682	GenBank	1663699
D87735	GenBank	1620021
D87969	GenBank	1694636
D89052	GenBank	1694672
D90226	GenBank	219946
D90373	GenBank	219477
E00882	GenBank	2169143
E01650	GenBank	2169903
E01797	GenBank	2170049
E01813	GenBank	2170065
E01827	GenBank	2170079
E01979	GenBank	2170227
E02628	GenBank	2170856
E02651	GenBank	2170879
E03569	GenBank	2171785
E06721	GenBank	2174903
E07218	GenBank	2175359
F28779	DBEst	4814405
F30276	DBEst	4815902
F31082	DBEst	4816708

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ACC NUM	DATABASE	GI NBR
H03854	DBEst	866787
H05412	DBEst	868964
H08994	DBEst	873816
H13339	DBEst	878159
H16426	DBEst	881246
H39960	DBEst	916012
H48742	DBEst	988582
H59372	DBEst	1012204
H60722	DBEst	1013554
H69238	DBEst	1030614
H72481	DBEst	1044297
H75695	DBEst	1049638
H78517	DBEst	1056606
H79084	DBEst	1057173
H84729	DBEst	1063923
H85709	DBEst	1067288
H89654	DBEst	1080084
J00269	GenBank	186699
J02621	GenBank	184229
J03005	GenBank	183183
J03040	GenBank	338312
J03171	GenBank	184645
J03191	GenBank	190385
J03210	GenBank	180670
J03464	GenBank	179595
J03473	GenBank	337423
J03799	GenBank	186840
J04080	GenBank	179645
J04164	GenBank	177801
J04177	GenBank	179729
J04765	GenBank	189404
J05013	GenBank	182417
J05021	GenBank	340216
J05192	GenBank	178026
J05633	GenBank	186504
K00558	GenBank	340020
K01566	GenBank	187721
K02765	GenBank	179664
L00160	GenBank	189904
L02547	GenBank	180598
L05092	GenBank	388031
L05186	GenBank	182394
L07633	GenBank	186512
L11066	GenBank	307322
L11932	GenBank	307423
L12711	GenBank	388890
L13848	GenBank	307382
L14599	GenBank	348238
L19161	GenBank	306899
L19184	GenBank	440305
L19597	GenBank	306467
L20941	GenBank	507251
L23959	GenBank	414316
L26081	GenBank	799328
L27560	GenBank	452059
L28010	GenBank	452047
L28809	GenBank	454151
L33404	GenBank	521214
L33930	GenBank	500848
L34155	GenBank	551596
L34839	GenBank	1220373
L38486	GenBank	790816
L42024	GenBank	804748

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ACC NUM	DATABASE	GI NBR
L43575	GenBank	899064
L44349	DBEst	1048859
L54057	GenBank	1196416
M10036	GenBank	339840
M10119	GenBank	182517
M10905	GenBank	182696
M11146	GenBank	182504
M13573	GenBank	189663
M13955	GenBank	186729
M14083	GenBank	189566
M14483	GenBank	339692
M14630	GenBank	339690
M14631	GenBank	183416
M15182	GenBank	183232
M15800	GenBank	187297
M16247	GenBank	178044
M16553	GenBank	339503
M16660	GenBank	184420
M16937	GenBank	184300
M17597	GenBank	340057
M17885	GenBank	190231
M20372	GenBank	189372
M22146	GenBank	337929
M22382	GenBank	190126
M22590	GenBank	179418
M22918	GenBank	189019
M22920	GenBank	189021
M23613	GenBank	189271
M24194	GenBank	187701
M25246	GenBank	340233
M26041	GenBank	188134
M26152	GenBank	1160968
M26325	GenBank	186688
M27913	GenBank	339807
M27971	GenBank	187621
M28373	GenBank	609448
M31159	GenBank	183115
M31212	GenBank	188589
M31899	GenBank	182178
M32110	GenBank	189421
M32790	GenBank	180804
M32798	GenBank	180856
M33308	GenBank	340236
M34064	GenBank	416292
M37583	GenBank	184059
M38106	GenBank	189169
M55409	GenBank	189596
M55542	GenBank	183001
M58485	GenBank	180154
M60457	GenBank	181249
M60854	GenBank	338446
M62403	GenBank	184815
M62810	GenBank	188563
M64241	GenBank	190813
M67468	GenBank	182672
M69181	GenBank	641957
M74002	GenBank	178996
M75126	GenBank	184020
M76729	GenBank	189519
M78113	DBEst	273850
M81757	GenBank	337732
M83248	GenBank	189150
M84739	GenBank	179881

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ACC NUM	DATABASE	GI NBR
M87503	GenBank	184652
M88279	GenBank	186389
M92357	GenBank	306463
N20576	DBEst	1125531
N34255	DBEst	1155397
N35187	DBEst	1156329
N35421	DBEst	1156563
N39717	DBEst	1163262
N40823	DBEst	1164420
N40852	DBEst	1164449
N67927	DBEst	1220052
N76180	DBEst	1238758
N76677	DBEst	1239255
N77080	DBEst	1239658
N84497	DBEst	1260122
N86776	DBEst	1439978
N91638	DBEst	1263947
N92086	DBEst	1264395
N99205	DBEst	1270661
Q37741	N/A	N/A
Q48043	N/A	N/A
Q65676	N/A	N/A
Q90526	N/A	N/A
R06046	DBEst	756666
R17092	DBEst	770702
R47228	DBEst	808115
R55150	DBEst	824379
R55398	DBEst	824693
R68132	DBEst	841649
R72676	DBEst	846708
R73306	DBEst	847338
R78333	DBEst	853443
R92367	DBEst	959907
R93637	DBEst	967803
R99649	DBEst	986250
S41458	GenBank	252252
S42303	GenBank	253482
S54005	GenBank	264772
S66431	GenBank	435777
S70154	GenBank	546900
S70290	GenBank	546602
S79895	GenBank	1195555
S82076	GenBank	1488423
T02792	DBEst	319308
T24119	DBEst	523315
T49314	DBEst	651174
T53479	DBEst	655339
T58797	DBEst	660634
T64560	DBEst	673605
T66112	DBEst	675157
T92160	DBEst	724073
T92396	DBEst	724309
U00947	GenBank	405049
U04815	GenBank	507157
U07151	GenBank	460624
U07857	GenBank	469048
U08470	GenBank	478884
U10323	GenBank	532312
U10439	GenBank	577169
U12465	GenBank	562073
U13665	GenBank	606922
U13877	GenBank	606943
U14550	GenBank	565079

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ACC NUM	DATABASE	GI NBR
U14966	GenBank	550012
U15008	GenBank	600747
U16306	GenBank	608514
U17104	GenBank	609307
U17496	GenBank	596139
U19769	GenBank	924600
U20896	GenBank	1046220
U22431	GenBank	881345
U22815	GenBank	930340
U24105	GenBank	1638873
U24153	GenBank	780807
U27768	GenBank	1216372
U33760	GenBank	995823
U33833	GenBank	1517815
U34877	GenBank	1143231
U39361	GenBank	1066081
U41515	GenBank	1209723
U46570	GenBank	1688073
U50733	GenBank	1255187
U51586	GenBank	1809247
U56255	GenBank	1399688
U59305	GenBank	1695872
U60975	GenBank	5030423
U61083	GenBank	4097430
U61397	GenBank	1518693
U63846	GenBank	1480921
U67784	GenBank	1617516
U68723	GenBank	2114391
U68727	GenBank	2052384
U68758	GenBank	4097815
U70735	GenBank	2360944
U77085	GenBank	1684789
U79258	GenBank	1710211
U79274	GenBank	1710240
U79278	GenBank	1710247
U80213	GenBank	1857418
U81234	GenBank	4098960
U82130	GenBank	1772663
U86602	GenBank	1835785
U87309	GenBank	1842092
U90028	GenBank	2745975
U90441	GenBank	2439984
U90902	GenBank	1913880
U90917	GenBank	1913898
U94831	GenBank	2276459
V00478	GenBank	28244
V00503	GenBank	30123
V05728	N/A	N/A
V11636	N/A	N/A
V57903	N/A	N/A
V59662	N/A	N/A
V59746	N/A	N/A
V84428	N/A	N/A
V86232	N/A	N/A
V87930	N/A	N/A
W07215	DBEst	1281217
W19127	DBEst	1294870
W19407	DBEst	1295308
W19441	DBEst	1295361
W25547	DBEst	1303421
W26197	DBEst	1306608
W38952	DBEst	1320872
W56388	DBEst	1358278

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ACC NUM	DATABASE	GI NBR
W68015	DBEst	1376884
W73140	DBEst	1383275
W73168	DBEst	1383322
W76204	DBEst	1386429
W87522	DBEst	1401728
W87891	DBEst	1401976
X00351	GenBank	28251
X00497	GenBank	32130
X01742	GenBank	35324
X01924	N/A	N/A
X03084	GenBank	29537
X04098	GenBank	28338
X04408	GenBank	31914
X04470	GenBank	28638
X05276	GenBank	37201
X05908	GenBank	34387
X06700	GenBank	30053
X07819	GenBank	35798
X13425	GenBank	31590
X14420	GenBank	30057
X15729	GenBank	38317
X15880	GenBank	30029
X16869	GenBank	31091
X17206	GenBank	34391
X24068	N/A	N/A
X37385	N/A	N/A
X37509	N/A	N/A
X40178	N/A	N/A
X51466	GenBank	31105
X53505	GenBank	36145
X54304	GenBank	34755
X54941	GenBank	29976
X55110	GenBank	35086
X55885	GenBank	34030
X56932	GenBank	23690
X56998	GenBank	37564
X56999	GenBank	37568
X57766	GenBank	456256
X62744	GenBank	36062
X63432	GenBank	28335
X66360	GenBank	36616
X67698	GenBank	37476
X68277	GenBank	29980
X68880	GenBank	31141
X69398	GenBank	396175
X69838	GenBank	287864
X70340	GenBank	37089
X71087	GenBank	288396
X73608	GenBank	793844
X73902	GenBank	452754
X74039	GenBank	456192
X74801	GenBank	671526
X74979	GenBank	400462
X76013	GenBank	531595
X76180	GenBank	452649
X78627	GenBank	607129
X81109	GenBank	535057
X82676	GenBank	3929753
X84939	GenBank	695548
X85373	GenBank	806565
X93036	GenBank	1085025
X93207	GenBank	2462486
X94323	GenBank	1213612

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ACC NUM	DATABASE	GI NBR
X94754	GenBank	1702931
X97324	GenBank	1806039
X99920	GenBank	1694827
Y00503	GenBank	34038
Y00757	GenBank	23910
Y00815	GenBank	34266
Y09188	GenBank	2230868
Y11435	GenBank	2910996
Y12065	GenBank	2230877
Y13247	GenBank	2117158
Y13286	GenBank	2853173
Y15286	GenBank	2584788
Y17114	GenBank	4160551
Z18538	GenBank	28711
Z18954	GenBank	396706
Z19054	GenBank	38519
Z21507	GenBank	38521
Z26317	GenBank	416177
Z29093	GenBank	732799
Z31696	GenBank	479156
Z32564	GenBank	473235
Z36531	GenBank	535184
Z37986	GenBank	780262
Z46629	GenBank	758102
Z47087	GenBank	860989
Z74615	GenBank	1418927

Table 2A

#	IMAGE_CLONE_ID	Gen Bank Accession Number	Ave-Normal-expression	Max-expression-of-29	Max-fold-up	Count-up tumors	Count-up cell lines	Chromosome	Location	Tissue 1	Tissue 2	Tissue 3
28	138917	R62862	3.40	104.38	30.71	5.00	0.00	1	119.16	Heart	Placenta	Breast
35	141562	R73003	284:38	1936.47	6.81	2.00	0.00			Ear	Placenta	Aorta
36	245330	N54596	17.81	1247.32	70.02	5.00	0.00	11	16.42			
39	665656	AA195636	5.96	41.56	6.97	1.00	0.00	5	640.93	Parathyroid	Placenta	Foreskin
43	41658	R52852	172.84	1148.01	6.64	1.00	1.00	9	370.3	Lymph	Heart	Bone
44	307553	N95249	29.69	401.10	13.51	1.00	0.00	12	93.93	Neural	Tonsil	Pooled
46	770192	AA434102	8.17	94.05	11.51	2.00	0.00			Ovary	Blood	Lymph
54	82671	T69348	2.44	13.61	5.58	1.00	0.00			Small intestine	Liver	Testis
72	123730	R01281	4.04	21.40	5.29	2.00	0.00	17	339.25	Spleen	Germ Cell	Pool
80	206894	R98436	0.87	4.57	5.26	1.00	0.00	1	165.59	Blood	Parathyroid	Pool
90	210575	H65066	12.82	75.35	5.88	3.00	0.00				Brain	CNS
94	753184	AA400739	19.83	101.81	5.13	1.00	0.00			Ear	Thyroid	Stomach
96	299879	W05628	16.34	170.18	10.42	2.00	0.00			Foreskin	Whole embryo	Cervix
97	124597	R02373	17.70	142.15	8.03	3.00	0.00	3	697.77	Liver	Pool	Kidney
98	79629	T62491	10.11	126.38	12.50	6.00	0.00	2	473.05	Lymph	Synovial mem	Thyroid
105	386834	AA029418	1.91	18.11	9.49	5.00	0.00			Pancreas	Ovary	Breast
115	785595	AA449459	32.04	420.31	13.12	2.00	0.00	4	420.51	Whole embryo	Pool	Heart
118	245330	N54596	16.00	2255.66	140.96	5.00	0.00	11	16.42			
120	193913	R83836	12.68	64.55	5.09	1.00	0.00	8	316.17	Head and nec	Thyroid	Adipose
121	66532	T67005	5.59	37.42	6.70	2.00	0.00	20	336.98	Neural	Pancreas	Heart
125	183337	H42679	13.99	179.31	12.82	5.00	0.00	6	118.59	Lymph	Lung	Breast
142	769369	AA464856	55.22	1034.25	18.73	2.00	0.00	6	76.3	Thyroid	Bone	Ovary
148	810787	AA481758	52.79	372.83	7.06	1.00	0.00	19	80.38	Omentum	Nose	Eye
150	214441	H73590	3.21	285.97	89.16	7.00	0.00	14	278.45	Lymph node	Adipose	Small intestine
157	727251	AA412053	100.19	1601.71	15.99	6.00	0.00	12	38.87	Esophagus	Synovial mem	Parathyroid
159	564803	AA129552	18.52	118.34	6.39	1.00	1.00	12	17.99	Larynx	Thyroid	CNS
161	813678	AA453823	6.53	92.09	14.11	3.00	0.00	5	124.15	Eye	CNS	Brain
170	82991	T70503	9.44	51.73	5.48	0.00	1.00	6	528.66	Liver	Pooled	Whole embryo
176	785845	AA449118	11.47	64.12	5.59	0.00	1.00	10	335.81	Whole embryo	Pooled	Umbilical cord
177	241412	H81220	7.55	44.36	5.88	1.00	0.00	13	130.71	Small intestine	Tonsil	CNS
181	125134	R05416	1.08	5.80	5.39	1.00	0.00			Lymph	Germ Cell	Blood
189	813552	AA455448	25.65	337.42	13.15	3.00	1.00	3	395.72	Smooth musc -		Kidney
193	363377	AA019591	11.01	64.88	5.89	1.00	0.00	7	427.43	Synovial mem	Stomach	CNS
201	300412	W20275	132.74	960.13	7.23	1.00	0.00	17	372.99	Placenta	Lung	Brain
202	66333	T66828	8.98	35.59	5.10	1.00	0.00	5	572.03	Aorta	Heart	Uterus
203	245000	N76276	22.03	125.65	5.70	3.00	0.00	22	79.48	Pool	LID not found	Other
207	121994	T98244	8.31	44.02	5.29	1.00	0.00	1	70.87	Stomach	Prostate	Parathyroid
215	122019	T98320	10.70	57.20	5.35	0.00	1.00			Pool	LID not found	Other
217	241392	H91281	33.92	209.27	6.17	2.00	0.00	4	0	Placenta	Tonsil	Testis
219	207859	H60586	5.62	35.13	6.25	1.00	0.00			Pool	LID not found	Other
222	195051	R91137	9.71	48.79	5.02	1.00	0.00			Adrenal gland	Pancreas	Testis
223	240937	H90997	8.74	60.87	6.96	2.00	4.00	5	322.42	Tonsil	Pool	LID not found
227	127185	R08220	41.66	295.18	7.09	2.00	0.00	6	650.09	Pool	LID not found	Other
228	132356	R27329	7.27	48.63	6.69	1.00	0.00			Placenta	LID not found	Other
231	357970	W92594	25.09	125.47	5.00	1.00	0.00	6	457.79	Thymus	Blood	Ear
232	136919	R38459	6.31	35.24	5.58	1.00	0.00			Breast	Ovary	Placenta
234	66377	T66907	541.40	3318.74	6.13	2.00	0.00			Pool	LID not found	Other
236	138737	R63623	8.74	100.81	11.51	1.00	0.00	12	277.88	Smooth musc	Aorta	Muscle
239	296444	W01048	6.03	102.30	16.95	8.00	0.00	1	550.58	Stomach	Germ Cell	Colon
243	120318	T97119	6.40	46.50	7.26	2.00	0.00			Pool	LID not found	Other
244	133130	R28397	10.74	60.32	5.62	2.00	0.00	5	121.96			
246	144924	R78513	21.71	265.65	12.24	2.00	0.00	6	475.49	Head and nec	Pooled	Pancreas

Table 2A

247	122126	T98484	26.60	185.68	6.98	5.00	3.00	1	75.41	Pool	LID not found	Other
248	136933	R39745	9.01	48.62	5.40	1.00	0.00			Placenta	Pool	LID not found
249	186918	H43317	1.43	22.38	15.68	4.00	0.00			Pooled	Breast	Ovary
254	132569	R26798	72.02	500.58	6.95	5.00	0.00	14	253.8	Pooled	Whole embryo	Placenta
255	122170	T98511	11.05	76.19	7.08	2.00	0.00	7	183.65	Pool	LID not found	Other
256	137647	R37884	2.90	14.73	5.07	1.00	0.00			Pooled	Placenta	LID not found
259	126234	R06362	3.19	25.58	8.01	3.00	0.00	8	374.98	Tonsil	Pool	Ovary
261	128833	R10185	7.10	38.50	5.43	2.00	0.00	12	14.49	Pancreas	Pool	LID not found
263	123065	T98529	25.64	237.06	9.25	6.00	0.00	21	225.9			
265	66753	T67652	25.31	165.76	6.55	4.00	3.00			Aorta	Pool	LID not found
266	66550	T67022	15.68	126.20	8.05	4.00	0.00	11	54.46	Breast	CNS	Pool
268	132323	R25464	180.89	1094.00	6.05	3.00	1.00	10	475.18	Placenta	LID not found	Other
275	127173	R08153	49.58	348.37	7.03	2.00	0.00	19	208.56			
278	416833	W86653	19.24	101.94	5.30	1.00	0.00	6	127.46	Gall bladder	Thyroid	Muscle
281	122161	T98458	179.55	1082.64	6.03	2.00	0.00			Pool	LID not found	Other
283	246074	N76944	15.36	91.97	5.99	0.00	1.00	20	212.02	Pancreas	Muscle	Eye
287	294255	N99839	78.47	702.93	8.96	6.00	2.00	6	539.64	Kidney	Pool	LID not found
289	200031	R97154	3.67	24.17	6.59	1.00	0.00					
290	245489	N72510	3.23	32.05	9.93	2.00	0.00			Parathyroid	Pool	LID not found
292	795856	AA461521	3.12	41.15	13.17	5.00	0.00			Smooth musc	Testis	Colon
298	430153	AA010158	12.49	114.03	9.13	0.00	1.00	1	707.84		Ear	Cervix
297	294444	W01484	3.19	16.00	5.02	1.00	0.00	22	136.36	Pool	LID not found	Other
302	296741	N74055	19.71	119.09	6.04	0.00	2.00			Pool	Lung	LID not found
303	110503	T89996	22.10	307.62	13.92	0.00	2.00	11	240.08			
305	292966	N53753	7.54	63.74	8.45	0.00	3.00			Pool	LID not found	Other
309	201030	H48360	25.61	135.80	5.30	0.00	1.00	1	174.05	Pool	LID not found	Other
311	141766	R70462	13.96	122.97	8.81	2.00	1.00	17	307.47			
316	417251	W87752	8.69	105.10	12.09	0.00	1.00	1	590.63			
317	296149	N74360	93.73	682.47	7.28	2.00	3.00			Testis	Pool	Prostate
321	196837	R92865	38.26	306.84	8.02	6.00	0.00			Pool	LID not found	Other
333	247194	N54036	3.08	18.86	6.12	2.00	0.00			Pool	LID not found	Other
339	111054	T81574	17.34	131.78	7.60	4.00	1.00			Pool	LID not found	Other
342	296141	W02624	2.08	14.68	7.07	1.00	4.00	7	148.31	Pool	LID not found	Other
343	149373	H04382	1.89	154.54	81.80	1.00	0.00	7	547.88	Pooled	Pool	Whole embryo
345	196222	R92962	37.51	298.59	7.96	4.00	0.00	12	222.36	Heart	Pool	LID not found
348	239861	H79566	3.55	40.18	11.33	2.00	0.00			Marrow	Blood	Breast
350	296168	N74365	17.45	132.42	7.59	5.00	0.00	1	85.25	Pool	LID not found	Other
355	111264	T84084	3.19	22.61	7.08	3.00	0.00	11	67.01	CNS	Foreskin	Pool
357	203227	H54822	10.15	59.26	5.84	1.00	0.00	12	246.56	Pool	LID not found	Other
362	244350	N75735	6.71	53.36	7.95	2.00	0.00			Ovary	Pool	LID not found
383	128438	R05642	38.58	354.88	9.20	1.00	2.00			Pool	Brain	LID not found
369	196636	R93007	18.40	376.08	20.44	6.00	5.00	16	361.71	Pool	LID not found	Other
371	111634	T80991	40.82	266.49	6.53	1.00	1.00	15	227.19	Pool	LID not found	Other
373	194307	H50747	9.12	116.99	12.83	2.00	5.00	19	194.27	Pool	LID not found	Other
379	201517	R97031	27.36	216.95	7.93	5.00	2.00	5	540.55	Neural	Kidney	Lung
381	109123	T80978	5.98	60.96	10.19	9.00	0.00			Ovary	Lung	Adrenal gland
384	262053	H98812	66.75	374.82	5.62	0.00	1.00					
392	770868	AA434487	6.01	32.14	5.35	1.00	0.00	12	247.33	Synovial mem	Thyroid	Parathyroid
403	211206	H67988	19.59	103.50	5.28	1.00	0.00	8	151.95	Smooth musc	-	Parathyroid
412	233457	H80129	5.31	36.08	6.80	1.00	0.00	X	317.31	Spleen	Thymus	Neural
414	50182	H17882	5.06	78.05	15.44	2.00	0.00			Eye	Parathyroid	Muscle
419	234907	H73080	48.24	723.83	15.00	2.00	0.00	4	490.87	Esophagus	Uterus	Whole embryo
423	123790	R01428	12.73	106.43	8.36	1.00	4.00					
427	753313	AA410265	7.78	86.78	11.15	3.00	0.00	1	96.87	Esophagus	Stomach	Larynx
446	823696	AA469743	20.09	441.66	21.98	2.00	0.00	10	421.81	-	Colon	Adrenal gland

Table 2A

450	510032	AA053051	9.68	52.00	5.37	1.00	0.00	17	126.91	Adipose	Colon	Kidney
452	724112	AA411244	5.50	43.21	7.86	9.00	0.00	2	576.49	Ovary	Testis	Pool
460	153411	R47979	103.88	1436.31	13.83	6.00	0.00	6	117.99	Lymph node	Lymph	Small intestine
472	144834	R77251	8.95	49.81	5.57	1.00	0.00	6	544.54	CNS	Thyroid	Cervix
475	753692	AA406601	51.39	322.04	6.27	1.00	0.00	10	510.68	Nose	Pooled	Stomach
485	840364	AA485626	76.01	443.38	5.83	1.00	0.00					
490	713680	AA284329	4.15	52.21	12.57	4.00	0.00	X	67.98	Ear	Bone	Foreskin
498	51463	H21071	74.83	486.06	6.50	2.00	0.00	5	353.54	Bone	Ear	Adrenal gland
504	198694	R95132	125.76	1238.62	9.85	1.00	0.00	15	340.51	Colon	Pool	LID not found
513	624074	AA491227	12.79	94.86	7.41	3.00	0.00	14	271.74		Tonsil	Blood
520	144740	R76229	4.18	40.44	9.67	2.00	0.00	11	264.42	Pooled	Placenta	Thymus
527	342593	W68537	4.62	76.81	16.61	5.00	0.00	2	576.49	Pooled	CNS	Foreskin
528	66336	T66833	7.00	35.19	5.03	1.00	0.00	11	40.11	Pooled	Breast	Parathyroid
536	358885	W84714	6.25	125.76	20.11	1.00	0.00	10	42.59	Nose	Aorta	Ear
557	32684	R43544	691.72	4076.06	5.89	1.00	0.00	3	459.05			
564	838359	AA457178	198.25	1429.49	7.21	5.00	2.00	4	644.84	Gall bladder	Eye	Bone
565	897835	AA598582	92.09	537.51	5.84	1.00	0.00	14	15.32	Synovial mem	Nose	Skin
571	626502	AA188155	37.77	303.69	8.04	3.00	0.00	7	510.47	Peripheral ner	Nose	Pancreas
575	814460	AA459247	5.26	28.23	5.36	1.00	0.00	9	410.77	Breast	Tonsil	Aorta
581	290039	N76471	4.86	41.62	8.56	4.00	0.00			Ear	CNS	Brain
583	241003	H81010	13.87	336.66	24.28	2.00	0.00	20	107.35	Heart	CNS	Germ Cell
584	194704	R89904	139.34	975.12	7.00	4.00	0.00	10	360.96			
587	126237	R06370	3.59	30.07	8.37	2.00	0.00			Adrenal gland	Pool	LID not found
592	194395	R83160	4.96	43.50	8.77	2.00	0.00			Pool	LID not found	Other
594	139766	R62242	4.03	23.97	5.95	1.00	0.00	14	217.02	Thyroid	Breast	Pool
596	141106	R66219	30.01	315.07	10.50	6.00	5.00	21	146.87	Placenta	LID not found	Other
599	292171	N79167	37.25	254.39	6.83	1.00	2.00	12	22.39	Lymph	Kidney	Testis
600	243638	N49883	21.64	147.82	6.83	3.00	0.00	X	26.02	Pool	LID not found	Other
605	154462	R54664	19.67	113.40	5.77	1.00	0.00	6	16.54	Larynx	Thyroid	Pancreas
606	109523	T81972	14.03	280.23	19.98	10.00	0.00			Pool	LID not found	Other
611	126401	R06568	20.42	148.44	7.27	3.00	0.00	13	130.76	Pool	LID not found	Other
624	295973	N73551	21.73	297.33	13.69	5.00	5.00	10	529.62			
627	126465	R06668	6.32	33.06	5.23	0.00	3.00	3	198.24	Pool	LID not found	Other
630	120309	T97215	86.73	548.95	6.33	2.00	0.00	17	278.88	Tonsil	Muscle	Spleen
639	196860	R93087	7.30	38.47	5.27	1.00	0.00	1	111.83	Pooled	CNS	Pancreas
640	242778	H93603	19.76	104.65	5.29	2.00	0.00	11	45.26	Prostate	Brain	Pool
646	111136	T83558	48.05	391.53	8.15	4.00	0.00			Pool	LID not found	Other
648	199841	R96525	18.22	259.47	14.24	6.00	4.00			Pool	LID not found	Other
649	325102	W49715	55.50	308.70	5.53	1.00	0.00	10	540.8			
652	140921	R66585	11.48	113.13	9.85	3.00	4.00			Colon	Prostate	Kidney
655	321560	W32884	22.61	144.53	6.39	2.00	0.00	16	185.45	Parathyroid	Foreskin	Thyroid
658	194600	R84242	16.46	171.30	10.41	3.00	0.00	13	135.33			
660	141230	R66652	5.33	66.65	12.51	5.00	4.00	10	107.65	Heart	Placenta	Kidney
662	110507	T82819	83.42	442.60	5.31	1.00	0.00	17	331.17	Epididymis	Breast	Tonsil
664	194587	R84376	56.83	430.88	7.58	5.00	0.00			-	Pool	LID not found
665	135873	R31591	38.62	249.43	6.46	4.00	2.00	8	278.83	CNS	Aorta	Lung
667	126509	R06745	4.10	32.22	7.85	2.00	0.00			Tonsil	Placenta	Pool
673	292522	N91307	28.39	259.36	9.13	1.00	0.00	6	586.46	CNS	Uterus	Eye
677	240050	H82330	105.95	601.66	5.68	1.00	2.00	0	382.37	Pool	LID not found	Other
688	795382	AA453498	7.42	60.23	8.12	3.00	0.00			Adipose	Breast	Testis
689	207665	H62287	44.34	286.04	6.45	2.00	3.00	1	623.7	Lymph	Pool	LID not found
690	136855	R36212	34.99	197.48	5.64	1.00	1.00	14	158.61	Placenta	LID not found	Other
693	282308	N80950	5.08	60.21	11.85	1.00	0.00	9	370.33	Ear	Lymph	Germ Cell
694	212180	H66943	17.47	105.55	6.04	0.00	2.00	3	570.8	Pool	Prostate	Germ Cell
696	810096	AA464967	3.63	28.47	7.85	2.00	0.00			Ovary	Testis	Placenta

Table 2A

698	128260	R09873	3.07	17.78	5.80	1.00	0.00	4	451.92	CNS	Germ Cell	Uterus
699	810104	AA464970	1.35	10.20	7.54	2.00	1.00	15	129.27	Peripheral ner	Blood	Spleen
700	810868	AA458969	3.01	16.86	5.64	1.00	0.00	3	473.39	Pooled	Brain	Pool
702	139376	R65573	4.27	26.10	6.11	1.00	0.00	17	534.21	Cervix	Colon	-
703	1030929	AA620346	1.42	7.13	5.02	0.00	1.00			Tonsil	Testis	LID not found
704	810843	AA458959	5.57	39.10	7.02	5.00	0.00			Thyroid	Spleen	Aorta
706	292812	N90470	102.29	1074.94	10.51	2.00	0.00	X	245.06			
707	824659	AA491302	5.45	46.58	8.55	6.00	0.00			CNS	Germ Cell	Colon
709	240318	H89795	10.25	76.85	7.50	6.00	0.00			Pool	LID not found	Other
710	247635	N58163	39.23	549.46	14.01	6.00	5.00			Bone	Muscle	Lymph
711	324225	W47350	19.74	143.45	7.27	3.00	0.00	11	235.26	Synovial mem	Germ Cell	Liver
719	321271	AA037410	2.82	33.33	11.83	9.00	0.00			Ignore	Colon	Blood
723	773220	AA425655	15.17	99.17	6.54	2.00	0.00	X	238.33	Small intestine	Gall bladder	Parathyroid
729	293847	N86001	12.26	103.51	8.44	2.00	5.00	7	530.17	Pool	LID not found	Other
739	327247	AA284292	1.12	6.46	5.74	1.00	0.00	9	119.56	Eye	Pooled	Placenta
740	810083	AA464962	9.45	105.15	11.12	2.00	0.00			Ignore	Synovial mem	Skin
741	240674	H90946	41.56	206.27	5.01	0.00	1.00			Prostate	Pool	LID not found
746	795798	AA459853	26.14	177.95	6.81	1.00	0.00	1	745.7	Adrenal gland	Parathyroid	Germ Cell
764	364555	AA022801	3.67	39.80	10.84	5.00	0.00			Aorta	CNS	Brain
765	241355	H90355	46.78	457.50	9.78	3.00	2.00			Pool	LID not found	Other
798	181458	H25546	5.22	244.53	46.84	10.00	1.00	11	67.01	Gall bladder	Adipose	Liver
800	179534	H51461	5.80	68.54	11.83	2.00	0.00			Brain	Germ Cell	Breast
806	292613	N68565	31.75	237.99	7.50	1.00	1.00	4	423.35	Ovary	Colon	Pool
816	129146	R10896	60.28	411.33	5.12	0.00	1.00	2	130.74	Thymus	Adipose	Parathyroid
836	563598	AA102670	3.06	23.49	7.69	2.00	0.00	5	631.73	Pancreas	Stomach	Breast
843	754031	AA479981	4.32	29.07	6.74	1.00	1.00	12	43.68	Eye	Brain	CNS
844	209137	H83934	5.84	39.73	6.80	2.00	0.00	X	345.45	Bone marrow	Pooled	Placenta
846	135221	R32952	2.34	78.39	33.57	2.00	0.00			Cervix	Placenta	Colon
851	809784	AA454743	3.79	396.88	104.82	15.00	1.00	19	274.67	Ovary	CNS	Colon
854	66731	T64905	1.81	33.71	18.64	1.00	0.00			Whole embryo	Placenta	Germ Cell
856	754479	AA410567	10.24	488.78	47.75	5.00	0.00	1	191.81	Adipose	Skin	Stomach
871	144777	R76263	48.30	252.69	5.23	0.00	1.00	1	539.01	Synovial mem	Adrenal gland	Gall bladder
872	305606	N90246	2.39	58.07	24.30	3.00	1.00	7	655.1	Parathyroid	Liver	Pancreas
878	75923	T47229	32.41	194.29	6.00	1.00	0.00	10	270.14	Parathyroid	Breast	CNS
893	243816	N39161	6.10	64.47	10.56	1.00	0.00	7	449.88	Adipose	Spleen	Placenta
900	838373	AA458801	16.75	198.15	11.83	0.00	2.00	13	220.79	Thymus	Ear	Cervix
905	770957	AA426170	13.13	72.40	5.51	0.00	1.00			Aorta	CNS	Bone
908	66564	T67056	7.48	39.15	5.24	1.00	0.00			Larynx	Pool	Colon
923	50990	H18438	7.30	38.82	5.05	1.00	0.00			Whole embryo	Brain	Testis
924	753862	AA410517	1172.13	6187.71	5.28	1.00	0.00	6	17.79	Cervix	Placenta	Skin
926	770212	AA434115	10.84	360.36	33.25	10.00	0.00	1	671.26	Adipose	Breast	Ovary
927	841332	AA487634	34.60	370.01	10.69	0.00	2.00	12	47.11	Lymph	Bone marrow	Thymus
929	196992	R93124	40.11	375.69	9.37	0.00	1.00			Liver	Esophagus	Synovial membrane
934	86220	T72422	5.52	31.38	5.68	1.00	0.00	4	644.55	Gall bladder	Liver	Pool
940	813830	AA447774	40.44	311.58	7.70	2.00	0.00	8	563.64	Head and nec	Muscle	Ovary
948	40017	R52654	185.04	936.24	5.06	1.00	0.00	7	111.22	Adrenal gland	Thyroid	CNS
954	784876	AA448015	3.03	23.48	7.74	0.00	2.00	10	471.64	CNS	Whole embryo	Testis
956	83231	T68351	3.89	19.90	5.12	0.00	1.00			Liver	Breast	Colon
961	111204	T84382	50.91	402.17	7.90	2.00	0.00	9	357.99	Eye	Pool	LID not found
962	66582	T67093	126.61	695.78	5.50	1.00	0.00	14	217.02	Thyroid	Breast	Pool
964	132848	R25641	5.08	29.44	5.79	2.00	0.00	14	7.79	Placenta	Heart	LID not found
969	244205	N52980	30.49	200.44	6.57	0.00	3.00			Eye	Colon	Whole embryo
973	711857	AA281189	111.11	671.93	6.05	1.00	0.00	8	186.21	-	Lung	Breast
974	66400	T66930	88.91	616.50	6.98	3.00	0.00	19	291.14	Breast	Pool	LID not found
985	292416	N91198	14.95	83.13	5.56	1.00	0.00	1	32.1			

Table 2A

989	195458	R91710	27.12	175.16	6.46	4.00	0.00	4	490.05	Prostate	Eye	Foreskin	
991	122384	T99145	47.05	333.08	7.08	1.00	2.00	17	372.99				
996	132623	R26813	104.02	678.64	6.52	3.00	0.00			Placenta	LID not found	Other	
998	294133	N99799	98.44	641.84	6.52	2.00	0.00	22	71.14				
999	122359	T99150	5.35	32.07	6.00	1.00	0.00			Pool	LID not found	Other	
1005	196148	R92352	182.88	1375.47	7.52	3.00	0.00	17	140.84	Thyroid	Spleen	Adrenal gland	
1007	122702	T98972	4.36	41.19	9.44	1.00	1.00	8	123.4	Testis	Pool	LID not found	
1011	233347	H77533	2.62	15.59	5.52	2.00	0.00			Pool	LID not found	Other	
1013	201207	R99288	37.43	282.46	7.55	3.00	0.00			Pool	LID not found	Other	
1015	122684	T99011	3.54	24.49	6.92	1.00	0.00	7	521.82	Pool	Ovary	LID not found	
1016	154312	R53024	3.94	33.50	8.50	0.00	1.00	6	150.81	Pool	LID not found	Other	
1017	123354	T99617	5.79	40.72	7.03	1.00	0.00			Pool	LID not found	Other	
1020	133225	R26931	10.47	76.10	7.27	1.00	0.00	13	157.6	Placenta	Pool	LID not found	
1021	244329	N75729	35.08	219.10	6.25	3.00	0.00			Pool	Brain	LID not found	
1023	212634	H69048	59.04	437.88	7.42	4.00	2.00			Larynx	Adipose	Skin	
1024	138168	R53860	18.37	169.98	9.25	6.00	0.00			Placenta	LID not found	Other	
1029	110980	T90360	43.18	325.87	7.55	3.00	0.00	3	197.02				
1033	293437	N92085	6.95	41.05	5.90	0.00	3.00			Pool	LID not found	Other	
1036	133333	R26855	32.01	214.24	6.69	4.00	1.00	19	82.52	Pooled	Placenta	LID not found	
1038	50214	H16746	1.78	13.27	7.46	1.00	0.00	3	430.49	Germ Cell	Tonsil	Breast	
1040	138165	R53900	61.67	409.70	6.64	2.00	0.00	X	245.08	Placenta	LID not found	Other	
1041	127076	R07998	17.84	209.29	11.73	5.00	5.00			Pool	LID not found	Other	
1045	127243	R08297	6.75	43.43	6.44	2.00	0.00	19	82.52	Blood	Lung	Placenta	
1048	138189	R53910	24.19	199.56	8.25	5.00	0.00	4	40.26	Umbilical cord	Uterus	Placenta	
1049	126838	R06936	6.16	49.63	8.05	3.00	0.00			Pool	LID not found	Other	
1051	123720	R01277	38.35	234.45	6.11	3.00	0.00	3	61.75	Pool	LID not found	Other	
1054	306808	W24055	4.33	40.15	9.27	3.00	1.00	1	111.69	Breast	Cervix	Blood	
1057	245413	N77203	27.69	626.95	22.64	6.00	5.00	17	429.02	Pool	LID not found	Other	
1060	251351	H96213	5.86	66.15	11.28	1.00	1.00	12	47.11	Small intestine	Smooth musc	Nose	
1062	296199	W02639	18.98	112.20	6.61	4.00	3.00			Pool	LID not found	Other	
1063	80384	T65770	1.98	20.07	10.25	2.00	0.00			Lung	LID not found	Other	
1065	197051	R83153	57.86	500.64	8.66	4.00	0.00			Pool	LID not found	Other	
1067	124271	R02036	1.63	10.32	6.34	1.00	0.00	19	48.71	Blood	Colon	Testis	
1068	291459	N72852	7.30	51.41	7.05	3.00	1.00						
1069	242644	H94978	2.87	18.35	6.40	2.00	0.00			Pool	LID not found	Other	
1070	296330	W03050	17.71	94.24	5.32	1.00	1.00			Pool	LID not found	Other	
1073	197093	R93412	12.23	84.11	6.88	3.00	0.00	4	669.93	Pool	LID not found	Other	
1074	245556	N77223	55.16	407.65	7.39	1.00	2.00	14	135.79	Pool	LID not found	Other	
1075	128795	R16769	12.74	178.01	13.98	2.00	2.00			Breast	Pool	LID not found	
1078	296334	W03052	23.32	129.45	5.55	1.00	0.00			Uterus	Tonsil	Testis	
1081	230637	H75490	16.96	175.65	9.26	6.00	0.00	12	473.2	Pool	LID not found	Other	
1093	295527	N74942	60.37	512.31	8.49	3.00	3.00	4	350.76	Pool	Heart	LID not found	
1106	245936	N76803	2.43	23.11	9.51	1.00	0.00			Heart	Ovary	Pool	
1108	287843	N62328	3.17	17.94	5.66	1.00	0.00	7	468.83	Aorta	CNS	Brain	
1111	187616	R83758	2.89	56.67	18.95	6.00	1.00	1	119.16	Heart	Placenta	Breast	
1113	198593	R94893	3.26	16.73	5.13	1.00	0.00	7	551.66	Pool	LID not found	Other	
1115	136874	R39705	43.22	287.22	6.65	2.00	2.00			Placenta	LID not found	Other	
1120	795604	AA460003	1.45	12.57	8.66	1.00	0.00	16	482.73	Small intestine	Adipose	Nose	
1121	292568	N91330	80.83	465.59	5.76	1.00	0.00			Pool	LID not found	Other	
1126	295321	W04369	18.15	93.56	5.16	1.00	0.00	8	334.17	Pool	LID not found	Other	
1127	196282	R92609	6.44	37.80	5.87	1.00	0.00	5	578.76				
1129	198339	R94212	9.24	113.38	12.27	3.00	5.00			Pool	LID not found	Other	
1130	246144	N55492	24.28	186.77	7.69	5.00	0.00	11	41.44	Lymph	Heart	Breast	
1137	198028	R94601	18.08	129.78	7.18	5.00	0.00	4	450.16				
1139	194155	H51056	7.92	43.88	5.54	1.00	0.00	1	711.38	Testis	Placenta	Pool	

Table 2A

1140	782217	AA431988	3.50	28.76	8.21	4.00	0.00	1	143.55	Colon	Testis	Prostate
1142	297411	W03672	20.92	140.00	6.69	5.00	4.00	6	458.69	Kidney	Pool	LID not found
1149	202357	H53156	27.14	235.66	8.68	1.00	3.00			Brain	Pool	LID not found
1151	230370	H75531	357.49	1974.00	5.52	1.00	0.00	17	24.51	Adipose	Bone	Blood
1152	256515	H95141	1.83	10.29	5.61	2.00	0.00			Bone	Whole embryo	Pancreas
1164	767183	AA424575	5.90	37.88	6.42	2.00	1.00	3	422.37	Lymph	Tonsil	Blood
1168	296998	N70349	12.50	68.30	5.47	2.00	0.00			Pool	Heart	LID not found
1174	154016	R48796	123.44	713.75	5.78	2.00	0.00					
1184	563444	AA112660	224.35	1858.11	8.28	2.00	0.00	16	480.32	Cervix	Stomach	Lung
1191	130153	R21614	26.66	211.73	7.39	1.00	1.00	19	235.13	Nose	Synovial mem	Thyroid
1195	41541	R52789	44.90	285.97	6.37	1.00	4.00	16	423.94			
1196	212640	H69620	2.04	22.60	11.07	1.00	0.00	X	351.05	Spleen	Lymph	Tonsil
1202	244189	N52474	10.02	73.50	7.33	4.00	0.00			CNS	Prostate	Colon
1203	687990	AA236617	61.49	332.30	5.40	1.00	0.00	X	320.23	Ear	Gall bladder	Blood
1206	233721	H79047	115.33	793.08	6.88	1.00	0.00	2	668.45	Liver	Ovary	Spleen
1222	813179	AA456321	13.08	211.38	16.16	3.00	0.00	12	397.89	Ear	Prostate	Eye
1227	245970	N52293	107.40	782.42	7.28	2.00	0.00	4	71.55	Gall bladder	Pooled	Foreskin
1228	295729	W02265	15.92	93.15	5.85	1.00	0.00			Gall bladder	Adipose	Aorta
1231	255680	N31467	26.17	145.89	5.58	1.00	1.00			Ignore	Head and nec	Germ Cell
1232	308041	W24429	2.84	18.79	5.71	1.00	0.00			Brain	Ovary	Lung
1236	740027	AA477514	87.23	582.63	6.68	1.00	0.00			Eye	Lymph	Testis
1240	243399	N48137	3.07	17.85	5.82	1.00	0.00	4	619.04	Pool	Lung	LID not found
1249	840768	AA486138	19.56	141.71	7.24	2.00	0.00	16	61.77	Larynx	Synovial mem	Pancreas
1250	363086	AA019482	4.30	82.85	19.25	7.00	0.00	15	145.79	Eye	Pooled	Brain
1261	840493	AA487797	37.99	330.90	8.71	2.00	0.00			Bone marrow	Adipose	Breast
1264	297421	W03677	132.17	704.71	5.33	1.00	0.00	2	607	Adipose	Muscle	Liver
1268	713762	AA292676	12.27	98.61	8.04	3.00	0.00	1	538.34	Stomach	Pancreas	Pooled
1271	826478	AA504351	46.90	284.97	6.08	1.00	0.00	19	216	Stomach	Tonsil	Pooled
1273	815526	AA456878	18.85	104.91	5.56	0.00	1.00	20	236.87	Larynx	Skin	Germ Cell
1279	825577	AA504710	4.57	34.79	7.61	1.00	0.00			Adrenal gland	Placenta	Tonsil
1284	129392	R11236	6.48	43.89	6.79	1.00	0.00	11	253.29	Aorta	Colon	Brain
1289	783729	AA443351	20.42	128.31	6.28	0.00	1.00	17	307.47			
1292	199251	R95780	18.05	136.35	7.55	3.00	0.00	3	512.91	Pool	LID not found	Other
1299	897987	AA598884	14.14	173.00	12.23	1.00	0.00	12	25.02	Peripheral ner	Cervix	Colon
1304	208531	H61979	22.28	292.14	13.11	2.00	0.00	3	157.87	Thyroid	-	Muscle
1311	788334	AA453015	6.57	38.03	5.78	1.00	0.00			Germ Cell	Uterus	Cervix
1313	714106	AA284668	102.66	621.94	6.06	0.00	1.00			Larynx	Pancreas	Gall bladder
1319	503617	AA131406	5.69	81.50	14.33	3.00	0.00	4	436.69	Lymph	Uterus	Kidney
1320	812266	AA455062	37.95	191.67	5.05	1.00	0.00			Placenta	Tonsil	Ovary
1330	263200	H99544	17.89	105.27	5.88	0.00	1.00	3	340.31	Eye	Foreskin	Pool
1331	782811	AA448261	130.33	687.71	5.28	0.00	2.00	2	87.96			
1335	786675	AA451904	17.56	4927.42	280.58	21.00	1.00	20	255.21	Epididymis	Ovary	Thyroid
1338	286072	W02558	8.04	59.98	7.46	1.00	0.00	3	732.12	Thymus	Tonsil	Breast
1345	244147	N51018	13.92	76.52	5.64	1.00	0.00	X	356.29	Nose	Bone	Placenta
1349	179232	H50229	3.08	23.17	7.52	2.00	0.00			Bone	Germ Cell	Colon
1350	128503	R10159	7.33	43.58	5.95	1.00	0.00			Pool	LID not found	Other
1352	194656	R84407	109.68	704.54	6.41	3.00	0.00	12	395.98	Pool	Brain	LID not found
1356	140301	R86924	17.17	145.52	8.48	5.00	4.00			Stomach	Bone	Placenta
1360	214658	H74032	142.25	964.40	6.78	3.00	0.00			Pool	LID not found	Other
1365	125788	R07684	56.26	358.42	6.37	2.00	0.00	18	299.63	Spleen	Germ Cell	Pancreas
1367	128617	R16479	12.84	68.58	5.30	0.00	1.00	2	75.15	Pool	LID not found	Other
1369	202339	H53038	10.03	56.20	5.60	2.00	0.00	X	245.06	Pool	LID not found	Other
1371	126566	R06862	37.91	219.55	5.79	0.00	1.00			Pool	LID not found	Other
1372	138239	R67991	6.52	80.26	12.32	5.00	4.00	9	252.87	Tonsil	Prostate	Placenta -
1375	128627	R16484	33.68	245.63	7.29	4.00	0.00			Lung	Pool	LID not found

Table 2A

1382	200863	R98877	150.20	803.04	5.35	1.00	0.00	15	142.19	Foreskin	Placenta	Stomach
1384	206949	R88736	5.57	31.49	5.66	1.00	0.00	19	73.91	Pool	LID not found	Other
1389	123815	R01451	3.92	19.87	5.07	0.00	1.00			Breast	Pool	LID not found
1393	320630	W31784	5.51	36.06	6.54	1.00	0.00			Parathyroid	LID not found	Other
1396	137760	R68514	74.76	665.11	8.90	3.00	0.00	11	292.28			
1400	242010	H93819	27.74	600.51	21.65	6.00	5.00					
1401	294916	N71457	68.02	407.57	5.99	1.00	2.00	19	278.5	Parathyroid	Uterus	Pool
1402	274932	R84636	3.51	23.16	6.60	1.00	0.00	17	269.7	Kidney	Colon	Testis
1404	137787	R68245	72.54	605.29	8.34	5.00	0.00			Placenta	LID not found	Other
1406	139354	R63735	16.98	114.43	6.74	3.00	0.00	5	528.2	Pancreas	Uterus	Germ Cell
1416	195720	R89157	11.00	64.99	5.91	3.00	2.00			Ovary	Kidney	Tonsil
1418	110282	T81988	21.87	176.10	8.05	4.00	0.00	1	712.78	Pool	LID not found	Other
1419	126884	R07313	4.93	25.54	5.18	1.00	0.00	15	286.07	Parathyroid	Aorta	Whole embryo
1422	110987	T90369	111.54	967.64	8.68	5.00	0.00	21	225.9	Pool	LID not found	Other
1424	193481	H47297	19.67	185.11	9.41	4.00	0.00	18	81.8	Pool	LID not found	Other
1428	137865	R66381	15.71	182.89	11.64	6.00	5.00	13	65.51	Placenta	Pool	LID not found
1430	203918	H56655	5.13	32.70	6.38	0.00	1.00	4	637.68	Placenta	Foreskin	Pool
1432	183200	H47335	63.56	650.81	10.24	3.00	4.00	18	442.68	Pool	LID not found	Other
1438	123079	R02528	32.03	199.57	6.23	4.00	0.00	19	71.09	Adipose	Thyroid	Bone
1441	210494	H65481	6.02	39.02	6.48	2.00	0.00			Blood	Germ Cell	Pool
1442	129600	R16600	1.87	12.41	6.64	1.00	0.00	2	513.74	Blood	Testis	Pool
1445	241475	H90477	36.55	289.85	7.93	4.00	0.00	3	222.62	Pool	Prostate	LID not found
1449	210431	H84938	90.85	459.67	5.06	1.00	0.00	7	615.41	Foreskin	Kidney	Pool
1452	322537	W15263	12.82	545.92	42.58	4.00	1.00			Nose	Stomach	CNS
1453	241497	H90490	38.26	293.84	7.68	4.00	0.00	5	500.36	Pool	LID not found	Other
1454	292542	N91317	34.54	332.54	9.63	3.00	4.00			Brain	Pool	LID not found
1456	39874	R54560	5.31	115.80	21.81	6.00	0.00	13	268.41	Esophagus	Ovary	CNS
1457	210301	H64972	6.10	54.08	8.86	1.00	0.00			Muscle	Prostate	Pool
1468	123548	R01566	34.96	232.53	6.65	2.00	0.00	20	70.67			
1472	770935	AA434382	122.18	1320.42	10.81	3.00	1.00	19	77.18	Placenta	-	Ovary
1473	210525	H65044	4.06	36.83	9.06	1.00	0.00	1	109.76	Pool	LID not found	Other
1474	109049	T80942	62.55	417.41	6.67	3.00	0.00	2	631.89	Smooth musc	CNS	Stomach
1479	385665	AA026030	1.36	8.22	5.95	1.00	0.00	1	711.92	Stomach	Germ Cell	Heart
1484	257823	N30839	106.28	670.95	6.31	3.00	0.00	X	245.06	Aorta	CNS	Placenta
1485	240769	H91353	14.27	98.73	6.92	1.00	0.00	11	247.66	Tonsil	Pool	LID not found
1495	810864	AA463972	6.22	34.07	5.48	1.00	0.00			Peripheral ner	Lung	Breast
1501	241274	H91216	55.83	309.64	5.55	2.00	0.00	X	245.06	Bone	Placenta	LID not found
1502	199258	R95827	8.14	41.66	5.12	1.00	0.00			Pool	LID not found	Other
1503	809603	AA458483	276.70	1506.42	5.44	1.00	0.00	13	239.18	Peripheral ner	Thymus	Thyroid
1505	210565	H65839	102.74	591.69	5.76	3.00	1.00	12	513.08	Pool	LID not found	Other
1507	505414	AA156251	1.38	7.07	5.12	1.00	0.00	12	400.71	Thymus	Lung	Uterus
1508	279399	N48708	4.05	26.75	6.60	1.00	0.00	9	148.92	Stomach	Testis	CNS
1510	293510	N68574	40.34	261.52	6.48	3.00	0.00	17	416.26	Pool	Brain	LID not found
1526	143756	R76499	8.32	42.28	5.08	1.00	0.00			Thymus	CNS	Tonsil
1528	811028	AA485373	69.42	382.14	5.50	1.00	0.00			Gall bladder	Smooth musc	Thyroid
1531	244323	N54803	122.58	792.85	6.47	4.00	2.00	20	193	Prostate	LID not found	Other
1533	246276	N77096	68.29	489.47	7.38	3.00	5.00	7	638.71	Whole embryo	Heart	Pool
1535	325380	AA284285	3.58	28.41	7.93	2.00	0.00			Muscle	Kidney	-
1548	247281	N57964	176.76	1010.53	5.72	1.00	0.00	6	629.01	Pool	LID not found	Other
1552	207288	H59620	8.53	45.76	5.36	1.00	0.00	7	682.13	Ear	Liver	CNS
1556	322561	W15277	848.75	7077.92	8.34	2.00	0.00	2	356.2	Umbilical cord	Muscle	Marrow
1564	123400	T99639	19.25	119.66	6.21	2.00	0.00	19	35.68	Smooth musc	Tonsil	Blood
1566	365945	AA083631	5.83	32.20	5.52	1.00	0.00	22	136.3	Synovial mem	Umbilical cord	Lymph node
1567	35271	R25521	12.26	85.06	6.94	1.00	0.00	7	526.17	Umbilical cord	Brain	Adrenal gland
1570	78294	T50788	11.05	96.58	8.74	6.00	0.00	5	421.53	Liver	-	Colon

Table 2A

1571	283696	N69872	21.39	111.69	5.22	1.00	0.00	6	99.75	Spleen	Blood	Liver
1590	123117	T98559	18.52	129.10	6.97	1.00	0.00	7	40.71	Smooth musc	Nose	Foreskin
1600	33476	R44864	1.07	10.96	10.24	1.00	0.00	9	385.82	Germ Cell	Testis	Ovary
1608	223098	H84113	48.32	399.66	8.27	3.00	0.00	11	228.96	Eye	Bone	Breast
1610	124261	R02348	96.33	617.76	6.41	2.00	0.00	19	269.17	Umbilical cord	Nose	Esophagus
1616	770910	AA433851	2.57	284.36	110.73	22.00	3.00	1	671.44	Esophagus	Adipose	Colon
1636	739801	AA477693	261.52	1440.73	5.12	1.00	0.00	13	86.55			
1639	739126	AA421687	11.49	95.99	8.35	2.00	0.00			Synovial mem	Blood	Colon
1646	897982	AA598863	34.56	427.57	12.37	5.00	0.00			Cervix	Synovial mem	Marrow
1652	949938	AA599177	222.88	2188.58	9.86	1.00	0.00	20	123.04	Peripheral nervous system		Adipose
1653	241474	H90415	68.14	409.18	6.00	1.00	1.00	17	317.13	Adrenal gland	Muscle	Cervix
1655	815285	AA461554	24.00	218.20	9.09	1.00	0.00	19	78.13	Neural	Skin	Blood
1668	841641	AA487700	134.93	754.06	5.59	1.00	0.00	11	259.81	Lymph node	Pancreas	-
1672	80109	T83324	13.00	200.07	15.39	8.00	0.00	6	118.59			
1674	810859	AA458965	63.93	359.71	5.63	1.00	0.00	16	78.05	Trachea	Ignore	Aorta
1679	814465	AA459286	6.59	34.82	5.29	1.00	0.00	7	384.36	Gall bladder	Uterus	Whole embryo
1687	591907	AA143436	4.94	67.25	13.60	1.00	0.00	11	252.9	Pancreas	Pooled	Uterus
1691	358162	W95346	6.38	56.93	8.92	1.00	0.00			Germ Cell	Testis	Heart
1692	839736	AA504943	33.81	320.07	9.47	2.00	0.00	11	373.41	Omentum	Bone marrow	Peripheral nervous system
1696	782513	AA432030	48.69	416.62	8.56	5.00	0.00	16	471.03	Ovary	Stomach	Ear
1698	815542	AA456886	21.58	509.40	23.61	7.00	0.00	21	217.43	Aorta	Foreskin	Pancreas
1699	563465	AA113331	2.24	16.67	7.43	1.00	0.00	13	317.36	Cervix	Uterus	Brain
1700	765965	AA460480	11.42	72.35	6.33	1.00	0.00	5	387.63	Muscle	Adrenal gland	Pooled
1701	768168	AA424833	10.20	57.27	5.62	1.00	0.00	6	39.19	Umbilical cord	Cervix	Esophagus
1703	843312	AA489555	31.61	254.18	8.04	1.00	0.00	22	114.01			
1714	824070	AA491225	11.60	63.56	5.48	1.00	0.00	X	345.25	Small Intestine	Gall bladder	CNS
1716	898092	AA596794	177.33	992.01	5.59	0.00	1.00	6	528.46	Bone	Ear	Umbilical cord
1720	242578	H94949	6.68	45.86	6.87	0.00	1.00	12	219.19	Stomach	Pool	Tonsil
1721	276547	N43930	4.34	28.92	6.66	3.00	0.00	19	67.5	Tonsil	Pancreas	Brain
1729	197474	H52098	5.66	30.08	5.31	1.00	0.00	20	104.97	Pool	LID not found	Other
1733	246705	N59717	14.97	87.18	5.83	2.00	0.00	19	73.14			
1737	241824	H93217	10.37	56.53	5.45	1.00	0.00	7	535.67	Whole embryo	Placenta	Heart
1739	120634	T95234	109.50	1068.76	9.76	4.00	0.00			Lung	Pool	LID not found
1741	124719	R02166	55.90	282.47	5.05	1.00	0.00			Cervix	Pool	LID not found
1747	120631	T95238	64.98	478.95	7.37	3.00	1.00			Pool	LID not found	Other
1751	240199	H89637	4.39	43.60	9.93	1.00	0.00	12	471.75	Testis	Tonsil	Brain
1753	297155	W03972	33.18	211.85	6.38	3.00	1.00			Foreskin	Pool	LID not found
1758	206816	R98295	205.87	1376.11	6.68	2.00	0.00	22	17.69	Adipose	Testis	Pancreas
1761	201322	R99685	15.09	115.32	7.64	4.00	0.00	2	508.62	Pool	LID not found	Other
1763	120162	T95274	9.20	172.76	18.79	5.00	0.00			Pool	LID not found	Other
1768	154789	R55406	60.85	339.65	5.58	2.00	0.00	X	245.06	Brain	LID not found	Other
1772	134719	R28287	7.63	112.75	14.78	3.00	0.00			Placenta	Lymph	Uterus
1773	245319	N76675	5.16	31.53	6.11	1.00	0.00			Pool	Brain	LID not found
1781	285283	W04411	16.57	103.73	6.26	3.00	0.00	11	271.39	Pool	LID not found	Other
1785	292207	N80622	75.72	761.78	10.06	5.00	0.00			Pool	LID not found	Other
1786	67070	T70429	46.44	276.87	5.96	1.00	0.00	5	596.66	Foreskin	Germ Cell	Brain
1789	120124	T95160	12.95	112.46	8.69	5.00	0.00			Brain	Pool	LID not found
1791	122913	T99894	48.43	358.85	7.41	3.00	2.00			Pool	LID not found	Other
1792	240838	H90990	3.44	23.62	6.86	2.00	0.00	7	580.91	Prostate	Pool	Brain
1793	113488	T79084	13.81	163.65	11.85	6.00	0.00	12	130.31			
1795	120823	T95462	3.18	23.26	7.32	5.00	0.00			Testis	Pool	LID not found
1797	124090	R02710	15.11	102.18	6.76	3.00	0.00	4	134.94	Pool	LID not found	Other
1801	195947	R92641	14.11	88.52	6.27	3.00	0.00	9	292.64			
1802	66423	R15715	49.59	368.38	7.43	4.00	0.00			Pool	LID not found	Other
1805	206094	H61608	28.07	258.86	9.22	4.00	0.00	10	434.43	Stomach	Pool	LID not found

Table 2A

1809	208769	H61037	18.90	161.93	8.57	5.00	0.00			Pool	LID not found	Other
1811	120173	T95693	3.91	24.88	6.36	1.00	0.00	1	727.12	Heart	Pool	LID not found
1814	236129	H53732	86.58	558.21	6.45	2.00	0.00	2	339.39			
1816	160626	H26019	3.56	42.17	11.84	3.00	0.00			Pooled	Lymph	Breast
1818	66430	R15709	4.24	22.12	5.22	1.00	0.00			Pool	LID not found	Other
1825	198578	R84808	8.58	98.17	11.21	3.00	5.00	3	697.77	Pool	LID not found	Other
1826	245452	N55067	13.01	68.48	5.26	1.00	0.00					
1829	210710	H66883	64.09	424.11	6.62	2.00	1.00			Pool	LID not found	Other
1834	247833	N77643	12.32	61.62	5.00	0.00	1.00	21	254.53	Lung	Pool	LID not found
1837	202492	H53224	26.35	154.92	5.88	1.00	0.00	3	726.84	Pool	LID not found	Other
1838	112409	T85990	26.87	177.11	6.59	1.00	0.00			Pool	LID not found	Other
1839	244652	N52911	99.41	622.47	6.26	1.00	0.00					
1841	198582	R94810	5.12	33.31	6.51	2.00	0.00	3	124.02	Pool	LID not found	Other
1842	247859	N77652	81.01	515.27	6.36	3.00	0.00	19	247.58	Pool	LID not found	Other
1843	194872	R91033	38.53	288.98	7.50	1.00	2.00			Foreskin	Pool	LID not found
1845	202553	H53262	49.02	304.89	6.22	1.00	0.00	10	114.69	Pool	LID not found	Other
1846	122963	R00220	58.94	402.53	6.83	3.00	0.00	1	27.3	Pool	LID not found	Other
1849	275834	R94840	32.68	512.12	15.67	6.00	5.00	3	49.43	Pool	LID not found	Other
1855	1046522	AA621150	3.41	25.32	7.41	2.00	0.00	5	353.54	Bone	Ear	Adrenal gland
1859	160573	H22171	4.45	23.63	5.31	0.00	1.00			Muscle	Colon	Tonsil
1861	202704	H53878	265.96	1460.54	5.49	1.00	0.00	X	92.32			
1862	123448	R00688	190.44	1272.50	6.68	2.00	0.00			Pool	LID not found	Other
1869	202703	H53553	13.42	113.02	8.42	1.00	5.00			Pool	LID not found	Other
1874	246824	N59494	5.08	50.15	9.87	4.00	0.00	6	495.48	Pool	LID not found	Other
1875	205417	H58938	29.74	266.28	8.95	4.00	2.00			Pool	LID not found	Other
1877	202802	H53920	28.65	219.15	7.60	6.00	0.00	13	155.48	Pool	LID not found	Other
1878	128290	R09890	37.79	288.23	7.63	2.00	0.00	X	93.95	Muscle	Ovary	Pool
1883	232586	H73321	47.88	358.75	7.49	3.00	2.00	1	340.75	Pool	LID not found	Other
1889	199229	R95819	7.40	48.35	6.53	5.00	0.00	22	84.53	Pool	LID not found	Other
1890	248688	N78301	36.63	443.91	12.12	6.00	5.00	1	561.29	Thyroid	CNS	Breast
1892	143790	R76782	12.03	77.18	6.42	3.00	1.00			Small intestine	Gall bladder	Parathyroid
1895	273435	N36882	187.81	854.31	5.09	1.00	0.00	18	-13.12	Thyroid	Adipose	Gall bladder
1905	199220	R95851	17.87	160.66	8.99	5.00	0.00			Pool	LID not found	Other
1907	233579	H78482	65.07	488.83	7.51	4.00	0.00	9	82.35	Pool	LID not found	Other
1908	417711	W88967	111.37	651.16	5.85	1.00	0.00	6	118.49	Small intestine	Thymus	Lung
1913	199243	R95869	11.23	103.85	9.25	3.00	3.00			Pool	LID not found	Other
1915	229330	H79363	183.56	1340.02	7.30	3.00	0.00	5	501.86	Pancreas	-	Placenta
1917	202795	H53964	54.55	320.43	5.87	2.00	0.00			Pool	LID not found	Other
1918	155201	R70361	89.10	682.72	7.66	5.00	0.00	19	250.8	Breast	LID not found	Other
1920	323917	AA284180	1.46	12.52	8.57	1.00	0.00	11	246.09	Tonsil	Gall bladder	Pancreas
1934	810485	AA457158	9.65	52.33	5.42	1.00	0.00				Pooled	Colon
1942	740925	AA478279	7.36	93.08	12.65	5.00	1.00	8	168.41	Ovary	Kidney	LID not found
1951	813426	AA458853	20.62	176.15	8.54	1.00	0.00	2	54.22	Foreskin	Gall bladder	Eye
1952	248261	N78083	2.50	37.43	14.96	8.00	2.00	9	27.23	Gall bladder	Spleen	Kidney
1958	233583	H78484	4.35	28.78	6.62	2.00	0.00	2	357.93	Uterus	Placenta	Kidney
1963	361943	AA001444	44.28	299.05	6.75	2.00	0.00	2	203.26	CNS	Gall bladder	Eye
1966	810213	AA464525	22.60	233.09	10.31	3.00	0.00	2	356.85	Aorta	Spleen	Parathyroid
1967	210522	H65034	5.93	30.58	5.15	0.00	1.00			Tonsil	Spleen	Blood
1975	133178	R28423	212.94	1549.07	7.27	1.00	0.00	16	-13.12	Thyroid	Adipose	Gall bladder
1978	128159	R11490	5.44	41.98	7.72	1.00	0.00			Muscle	Esophagus	
1980	234011	H66158	19.37	259.81	13.41	4.00	0.00	12	130.31	Aorta	Placenta	Heart
2000	361639	W96268	29.87	243.29	8.15	4.00	0.00	22	37.19	Cervix	Placenta	Blood
2006	128413	R06834	4.92	44.36	9.01	1.00	0.00	10	40.65	Liver		Spleen
2008	381812	AA058857	1.53	7.95	5.20	1.00	0.00	1	111.21	NO OBSERVED TISSUES		
2014	668685	AA233079	5.50	51.37	9.35	1.00	0.00	7	215.58	Uterus		Placenta

Table 2A

2034	470379	AA031264	10.20	63.47	6.22	3.00	0.00	3	121.8			
2036	135608	R31395	4.41	32.04	7.27	0.00	1.00	3	117.28	Blood	Germ Cell	Tonsil
2043	41650	R52797	8.81	457.65	53.16	0.00	1.00	7	455.24	CNS	Placenta	Brain
2046	840333	AA485401	16.36	108.93	5.93	1.00	0.00	3	113.12	Larynx	Skin	Muscle
2053	795888	AA460756	47.97	266.65	5.56	1.00	0.00	12	-5.34	Ignore	Spleen	Lymph
2056	340712	W55997	5.05	34.15	6.76	2.00	0.00	11	253.29	Adrenal gland	Foreskin	Blood
2061	525566	AA064715	21.72	177.40	8.17	2.00	0.00	19	87.54			
2063	841008	AA486849	13.71	101.15	7.38	2.00	0.00	1	252.77	Umbilical cord	Thyroid	Pancreas
2070	813529	AA457047	30.58	154.37	5.05	1.00	0.00	3	69.22	Tonsil	Ear	Ovary
2073	24415	R39356	65.67	501.66	5.86	0.00	2.00	17	53.69	Umbilical cord	Skin	Pooled
2081	841340	AA487637	14.27	109.00	7.64	2.00	0.00	6	117.99	Omentum	Larynx	Ear
2084	366341	AA025779	4.65	35.01	7.53	2.00	0.00	7	84.81	Thymus	Placenta	Skin
2085	511616	AA088745	38.62	204.15	5.29	1.00	0.00	11	271.39	Colon	Pool	LID not found
2092	140354	R65622	10.46	101.22	9.66	1.00	0.00	19	17.75			
2120	193586	H47475	24.52	179.74	7.33	2.00	0.00	5	529.34	Pool	LID not found	Other
2127	129853	R17054	3.67	22.41	6.11	2.00	0.00			Pool	LID not found	Other
2132	141453	R68997	7.43	80.27	10.80	4.00	5.00	5	110.31	Parathyroid	Uterus	Placenta
2136	193533	H47542	33.47	294.33	8.79	5.00	0.00	4	102.82	Pool	LID not found	Other
2138	108651	T72691	6.16	44.92	7.29	0.00	1.00			Umbilical cord	Aorta	Pool
2142	111004	T90374	80.87	511.71	6.33	2.00	0.00	19	277.06	Thyroid	Testis	Whole embryo
2145	294310	N64431	5.63	46.63	8.28	1.00	0.00	20	336.98	Aorta	Umbilical cord	Muscle
2148	141765	R69798	5.98	34.36	5.77	1.00	0.00	9	356.18	Placenta	LID not found	Other
2152	233289	H78855	32.09	265.95	8.29	5.00	0.00	16	98.57	CNS	Breast	Pool
2156	142387	R69934	144.43	1282.55	8.88	3.00	0.00	X	245.06	Kidney	LID not found	Other
2160	193617	H47929	3.69	21.37	5.80	1.00	0.00			Pool	LID not found	Other
2161	276266	R94591	84.38	700.57	8.30	5.00	0.00	3	726.64	Pool	LID not found	Other
2168	295866	N67006	80.55	770.65	9.57	3.00	0.00	12	241.3	Ovary	Nose	Lymph
2169	137387	R38133	5.63	83.92	14.91	3.00	3.00	6	66.84			
2171	125799	R07695	46.22	359.21	7.77	4.00	0.00	15	215.11	Adipose	Ear	Thyroid
2178	294973	N99539	15.66	110.38	6.96	1.00	0.00	12	55.14	Liver	Cervix	Parathyroid
2180	142532	R70140	12.35	112.24	9.09	1.00	0.00	8	43.96	Blood	Breast	Placenta
2183	341805	W60845	12.68	67.31	5.31	1.00	0.00	18	427	Aorta	Adrenal gland	Foreskin
2184	193713	H48115	5.72	43.03	7.52	2.00	0.00			Pool	LID not found	Other
2189	121275	T96731	47.39	333.67	7.04	2.00	0.00	6	117.99	Pool	LID not found	Other
2196	155128	R70318	61.78	415.93	6.73	2.00	0.00	3	141.89	Breast	-	Prostate
2198	111510	T90794	8.21	53.74	6.55	2.00	0.00			Pool	LID not found	Other
2199	198190	R92412	46.38	340.79	7.51	4.00	0.00	14	112.35	-	Uterus	Kidney
2204	240748	H91337	32.24	396.25	12.29	6.00	5.00			Gall bladder	Tonsil	Breast
2208	193724	H47883	17.13	279.24	16.30	6.00	5.00	6	137.73	Pool	-	Lung
2213	242084	H93842	25.24	176.76	7.00	5.00	0.00	5	357.75	Pool	LID not found	Other
2214	294127	N71365	133.97	1144.60	8.54	3.00	0.00			Whole embryo	Pool	Placenta
2216	771133	AA427782	2.17	13.96	6.43	2.00	0.00			Thymus	Pooled	Ovary
2217	229651	H66442	54.68	367.61	6.72	3.00	0.00	14	192.57	Pool	LID not found	Other
2223	342522	W68559	1.98	10.16	5.12	1.00	0.00	17	404.02	Germ Cell	Kidney	Lung
2226	206986	H48389	5.02	28.44	5.67	1.00	1.00	8	474.66	Pool	LID not found	Other
2232	809552	AA456598	2.67	30.26	11.32	8.00	0.00	14	241.84	Spleen	Pancreas	Ovary
2234	324342	W47576	8.63	43.63	5.06	1.00	0.00			Adrenal gland	-	Lung
2235	1049291	AA620759	4.23	45.28	10.70	4.00	0.00					
2245	242780	H93604	6.56	62.06	9.45	1.00	0.00	9	400.27	Bone	Cervix	Umbilical cord
2247	290893	N72009	12.40	103.45	8.34	6.00	0.00			Foreskin	LID not found	Other
2251	267241	N24581	65.63	337.04	5.06	1.00	0.00	5	469.26	Foreskin	LID not found	Other
2252	809788	AA454745	109.79	628.25	5.72	2.00	0.00	8	103.36	Germ Cell	Eye	Uterus
2254	322723	W15465	31.64	265.18	8.38	2.00	3.00	8	180.89	CNS	Germ Cell	Foreskin
2255	247582	N54244	163.85	1183.85	7.23	4.00	0.00			Thymus	Skin	Aorta
2257	292424	N91202	17.17	109.48	6.38	3.00	0.00	1	671.44	Skin	Eye	Testis

Table 2A

2261	242797	H94043	114.39	616.98	5.39	1.00	0.00			Umbilical cord	Aorta	Whole embryo
2262	241179	H91121	41.59	383.46	9.22	5.00	0.00	4	636.05	Gall bladder	Liver	Spleen
2263	415946	W86376	109.92	965.51	8.78	3.00	0.00			Pool	LID not found	Other
2266	213496	H70120	21.62	135.46	6.21	3.00	0.00	7	428.53	Placenta	Pool	LID not found
2269	242698	H94262	7.03	38.98	5.26	2.00	0.00	9	358.65	Pancreas	Colon	Pool
2270	210744	H66856	4.23	37.73	8.92	6.00	0.00	2	315.78	Pool	LID not found	Other
2271	268960	N24645	21.41	165.74	7.74	5.00	2.00			Foreskin	Pool	LID not found
2278	211859	H68719	105.30	931.91	8.85	3.00	4.00	20	70.67	Pool	LID not found	Other
2279	325150	AA284259	15.39	93.16	6.05	3.00	0.00	14	83.08	-	Heart	Parathyroid
2280	66676	T67261	11.96	73.97	6.18	3.00	0.00	10	171.71	Brain	Pool	LID not found
2292	503083	AA148641	19.96	118.63	5.94	0.00	1.00			Uterus	Whole embryo	Lung
2299	366579	AA026686	26.38	145.08	5.50	3.00	0.00	15	143.64	Small intestine	Neural	Gall bladder
2300	810613	AA464741	7.48	48.81	6.53	1.00	0.00	19	102.57	Synovial mem	-	Muscle
2301	243199	H94578	3.49	25.42	7.29	1.00	0.00			Pool	LID not found	Other
2302	235173	H73013	35.34	293.21	8.30	5.00	0.00			Pool	LID not found	Other
2303	377587	AA055829	8.81	72.71	8.44	4.00	0.00			Placenta	Heart	Pool
2306	190491	H37774	42.49	298.01	7.01	3.00	0.00	16	45.38	Epididymis	Colon	Muscle
2312	43743	H04985	3.12	36.65	11.73	1.00	0.00	5	39.72	Brain	CNS	Eye
2316	841357	AA487452	35.60	181.59	5.10	0.00	1.00	1	43.64	Synovial mem	Lymph	Bone
2327	766031	AA418846	3.56	30.39	8.54	3.00	0.00			Adrenal gland	Pancreas	Heart
2335	184038	H30688	1.95	28.40	14.59	7.00	0.00			Pancreas	Lymph	Brain
2348	51737	H23021	65.76	382.27	5.81	1.00	1.00	18	184.45	Foreskin	Muscle	Tonsil
2358	810521	AA464644	6.25	152.12	24.34	2.00	0.00	11	130.57	Synovial mem	Tonsil	Parathyroid
2367	175103	H39187	6.25	67.88	10.86	8.00	2.00	1	343.57	Parathyroid	Aorta	Brain
2376	243343	N38959	151.11	888.28	5.88	2.00	0.00	12	291.26	Head and nec	Umbilical cord	Lymph
2383	726678	AA398230	5.84	56.12	9.60	1.00	0.00	10	387.49	Smooth musc	Synovial mem	Brain
2404	85497	T71879	11.90	237.13	19.93	4.00	0.00	6	117.72	Liver	Thymus	Ovary
2413	810444	AA457114	21.63	148.28	6.86	4.00	0.00	14	276.5	Head and nec	Pooled	Breast
2421	201727	R89749	10.81	93.80	8.67	10.00	0.00	3	694.79	CNS	Uterus	Tonsil
2423	741841	AA402879	13.62	98.50	7.23	2.00	0.00			Ignore	Skin	Germ Cell
2424	66560	T67053	15.83	529.35	33.43	6.00	0.00	22	46.67			
2444	85128	T71284	19.00	230.99	12.16	3.00	0.00	1	79.91	Liver	Thymus	Skin
2446	417508	W88699	3.33	78.08	23.47	4.00	1.00	2	387.37	Stomach	Kidney	Parathyroid
2448	85840	T72235	152.31	788.55	5.18	1.00	0.00	11	373.32	Liver	Gall bladder	Adipose
2449	195712	R89492	11.24	66.46	5.91	2.00	2.00	10	438.27	Liver	Pool	LID not found
2450	840687	AA488073	9.89	778.31	78.68	22.00	0.00	1	538.46	Stomach	Nose	Pancreas
2451	119914	T94293	51.83	670.76	12.94	7.00	0.00	16	170.16			
2452	704020	AA279147	4.64	27.22	5.86	2.00	0.00			Placenta	Tonsil	-
2453	295137	N71853	17.50	98.21	5.61	1.00	0.00	17	46.49	Foreskin	Muscle	Kidney
2477	179890	H51574	4.22	31.31	7.43	2.00	0.00	10	268.08	Smooth musc	Blood	Tonsil
2478	39593	R51912	1.23	135.62	110.61	5.00	0.00	3	701.75	Pooled	Pancreas	Brain
2479	380737	AA054358	4.26	23.81	5.59	1.00	0.00			Eye	-	Heart
2493	159608	H15842	26.37	320.35	12.15	1.00	0.00	3	726.84	Peripheral ner	Adipose	Breast
2497	295939	N67034	13.84	369.35	26.69	3.00	0.00	6	19.39			
2499	120681	T95657	40.85	307.34	7.52	5.00	0.00	19	250.6			
2501	128775	R10007	16.60	125.68	7.57	2.00	0.00			Pool	Uterus	LID not found
2502	29063	R40970	7.26	40.07	5.52	0.00	1.00	1	727.12	Synovial mem	Umbilical cord	Bone
2505	141854	R70598	54.14	1070.61	19.77	5.00	0.00			Esophagus	Skin	Gall bladder
2507	196109	R92236	44.41	311.44	7.01	3.00	0.00			Pool	Brain	LID not found
2509	127119	R08083	18.59	134.53	7.24	3.00	0.00			Pool	Tonsil	LID not found
2514	31251	R42852	3.49	80.80	23.15	5.00	0.00	X	86.82	Ear	Bone	Foreskin
2515	120695	T95804	1.93	11.57	5.99	1.00	0.00			Synovial mem	Lymph	-
2516	234378	N28268	7.27	169.22	23.29	7.00	0.00			Adipose	Pooled	Foreskin
2518	120413	T95953	8.44	64.61	7.66	2.00	0.00			Spleen	Pool	LID not found
2524	134256	R31107	2.47	14.88	6.02	3.00	0.00	12	288.31	Placenta	Germ Cell	LID not found

Table 2A

2525	232899	H75578	135.71	1157.00	8.53	4.00	0.00	11	104.49	Stomach	Adrenal gland	Aorta
2526	126741	R07663	4.04	22.65	5.61	1.00	0.00			Spleen	Pool	LID not found
2527	209264	H65569	4.01	20.77	5.18	1.00	0.00	13	74	Tonsil	Pool	LID not found
2528	292392	N68390	4.69	23.56	5.03	1.00	0.00	9	276.55	Whole embryo	Germ Cell	Pancreas
2529	211878	H68724	12.97	78.72	6.07	2.00	2.00	13	85.4	Pool	LID not found	Other
2530	154654	R55184	4.36	68.52	15.27	9.00	0.00	16	352.18		Breast	Heart
2531	126355	R06544	30.98	206.48	6.67	2.00	0.00			Pool	LID not found	Other
2543	122899	R00151	20.06	158.02	7.88	3.00	1.00					
2544	138501	R63407	4.74	36.34	7.67	2.00	0.00	1	56.78			
2545	243260	H95823	94.16	624.13	6.75	5.00	0.00			Small intestine	Tonsil	Pool
2553	126735	R14602	29.54	256.66	8.76	5.00	1.00	13	107.1	Pool	Lung	LID not found
2555	120383	T96035	3.82	54.07	14.15	3.00	0.00	5	378.73	Blood	Pool	LID not found
2561	110585	T90201	15.24	156.45	10.27	7.00	0.00	12	457.41	Pool	LID not found	Other
2563	120863	T96077	5.29	61.32	11.60	5.00	0.00	1	-1.31	Pool	LID not found	Other
2564	135094	R31426	137.52	1087.72	7.91	3.00	0.00	12	246.56	Placenta	LID not found	Other
2568	366986	AA026562	51.69	513.37	9.89	4.00	4.00	10	426.56	Thymus	Adipose	Tonsil
2569	137417	R38239	127.60	877.81	6.87	4.00	0.00	17	363.86	Placenta	LID not found	Other
2573	292679	N62695	400.94	2154.88	5.37	3.00	0.00	14	281.08			
2579	120973	T96215	25.88	185.96	7.19	3.00	0.00	7	449.84			
2585	245585	N72540	13.52	83.07	6.14	0.00	1.00			Thymus	Skin	Aorta
2590	204735	H57242	36.75	344.96	9.39	5.00	0.00			Liver	Pool	LID not found
2591	123459	R00608	4.31	47.67	11.06	1.00	0.00	1	130.77	Heart	Lung	Pool
2592	214205	H77797	40.13	537.54	13.40	6.00	5.00	9	367.64	Ovary	Breast	Pool
2597	297084	W03793	2.97	15.00	5.04	1.00	0.00			Lung	Pool	LID not found
2598	208904	H83760	3.89	22.89	5.89	1.00	0.00	4	495.88	Pool	Brain	LID not found
2601	197656	R96208	25.79	220.20	8.54	3.00	0.00	6	315.52	Pool	LID not found	Other
2606	191572	H37880	102.78	630.02	6.13	2.00	0.00			Kidney	Pool	-
2611	243414	N48139	20.60	142.27	6.91	5.00	0.00	10	310.17	Pool	LID not found	Other
2613	203038	H54188	1.57	13.53	8.59	1.00	0.00	11	250.51	Pool	LID not found	Other
2614	244343	N72321	29.63	201.79	6.81	3.00	0.00	9	24.47	Muscle	Heart	Pool
2622	195132	R91215	78.02	697.42	8.94	3.00	0.00	4	102.82			
2625	213969	H72388	3.49	19.26	5.52	2.00	0.00	17	486.39	Pool	Prostate	LID not found
2627	113300	T83829	7.44	39.45	5.30	1.00	1.00			Small intestine	Foreskin	Germ Cell
2629	203122	H54423	60.77	453.86	7.47	2.00	3.00			Pool	LID not found	Other
2630	292471	N91231	41.37	242.75	5.87	2.00	0.00			Pool	LID not found	Other
2633	198011	R96436	3.81	22.55	5.92	4.00	0.00	7	593.58	-	Prostate	Pool
2634	293421	N92136	62.21	373.00	6.00	1.00	2.00			Pool	LID not found	Other
2636	271050	N29914	3.14	56.77	18.07	1.00	0.00	13	226.98	Foreskin	Ear	Placenta
2637	203287	H54609	21.94	135.43	6.17	4.00	2.00	8	478.59	Pool	LID not found	Other
2638	246652	N57713	172.05	1166.66	6.78	1.00	2.00	10	510.78	Pool	LID not found	Other
2641	245299	N53453	29.31	241.70	8.25	7.00	0.00	17	68.61	-	Pool	LID not found
2646	201651	R98262	14.95	100.26	6.70	4.00	0.00	7	521.82	Testis	Pool	LID not found
2647	305608	N90246	2.26	30.08	13.30	10.00	0.00	7	655.1	Parathyroid	Liver	Pancreas
2649	232837	H73329	5.33	28.12	5.28	1.00	0.00			Aorta	Pancreas	Heart
2650	294311	W02016	2.84	15.44	5.45	1.00	0.00			Whole embryo	Pool	LID not found
2651	613410	AA458846	57.11	348.14	6.10	1.00	0.00	8	436.84	Thyroid	Ear	Bone
2653	203388	H54811	3.70	34.01	9.16	2.00	0.00	6	137.43	Pool	LID not found	Other
2654	201203	R99287	158.79	1072.08	6.75	2.00	0.00	18	14.7	Pool	LID not found	Other
2657	199823	R98561	1.99	18.66	9.37	2.00	0.00			Pool	LID not found	Other
2662	202414	H52623	78.26	525.41	6.71	2.00	1.00			Pool	LID not found	Other
2664	244044	N38801	16.16	256.25	15.86	5.00	0.00	1	81.13	Thymus	Colon	Breast
2665	199602	R96586	13.16	92.70	7.05	4.00	0.00			Eye	Pool	LID not found
2666	293306	N91731	41.14	280.22	6.81	1.00	1.00			Pool	LID not found	Other
2670	248478	N59638	169.54	1068.24	6.30	2.00	0.00			Pool	LID not found	Other
2675	296797	N74086	20.94	167.00	7.98	4.00	0.00					

Table 2A

2678	243428	N49439	27.64	193.16	6.99	5.00	3.00			Pool	LID not found	Other
2681	199709	R96694	8.85	45.30	5.24	1.00	0.00	2	96.76	Ear	Pool	LID not found
2683	305227	W19461	172.06	929.50	5.40	1.00	0.00	2	631.68	Ignore	CNS	-
2685	207448	H60119	13.74	151.89	11.06	4.00	5.00	2	192.45	Marrow	Ovary	Pool
2686	294995	N99553	191.71	1146.72	5.98	1.00	0.00	11	371.29			
2687	324815	W49563	9.08	74.88	8.25	1.00	1.00	20	57.43	Thyroid	Foreskin	Blood
2688	115443	T87341	18.22	117.14	6.43	0.00	2.00	1	701.1	Germ Cell	Heart	Spleen
2695	204335	H59915	91.58	1116.13	12.19	10.00	0.00	12	347.38	Thyroid	Larynx	Pancreas
2696	753775	AA406242	13.19	149.08	11.31	1.00	0.00	6	58.61	Foreskin	Muscle	-
2702	39884	R52542	8.30	44.79	5.40	1.00	0.00	7	585.14		Esophagus	Blood
2712	122636	T98886	48.48	306.49	6.32	2.00	1.00	17	308.36	Kidney	Pool	LID not found
2714	741497	AA401137	6.39	446.78	69.89	16.00	2.00	9	390	Head and nec	Bone marrow	Neural
2716	810891	AA459519	87.81	1099.65	12.52	3.00	0.00			Pooled	Gall bladder	Stomach
2727	24842	T80232	8.66	63.58	7.34	2.00	0.00	5	138.07	Eye	Whole embryo	Spleen
2731	160793	H24707	21.08	148.31	7.03	0.00	2.00			Thymus	Tonsil	Breast
2743	470179	AA028963	12.86	76.40	5.94	3.00	0.00	7	80.45	Blood	Skin	Stomach
2755	813149	AA456695	11.37	96.21	8.46	3.00	0.00	1	553.7	Placenta	Eye	Pool
2756	243741	N49629	4.64	255.66	55.06	8.00	0.00	8	107.37	Ignore	Aorta	Germ Cell
2759	50413	H17975	2.99	18.54	6.21	1.00	0.00	22	-10.31	Eye	Parathyroid	Whole embryo
2760	823859	AA490688	8.33	52.08	6.25	1.00	0.00	13	41.94	Ear	Colon	Whole embryo
2762	41565	R66447	3.95	45.07	11.41	2.00	0.00	2	58.38	Germ Cell	Bone	Lung
2763	261204	H98218	13.30	620.78	46.68	0.00	2.00			Foreskin	Whole embryo	-
2779	155718	R72075	4.68	49.41	10.56	0.00	2.00			Liver	Brain	Breast
2783	65509	T71888	5.75	30.52	5.31	1.00	0.00	19	250.6	Liver	Gall bladder	-
2790	815503	AA456869	26.57	134.44	5.06	0.00	1.00	14	280.97	Tonsil	Bone	Pooled
2799	700527	AA291163	42.21	288.07	6.83	1.00	0.00	5	414.87		Gall bladder	Adipose
2802	843028	AA488406	9.55	337.36	35.33	9.00	0.00	16	24.9	Ovary	Cervix	Pancreas
2812	136802	R36175	19.30	156.71	8.12	3.00	0.00			Placenta	LID not found	Other
2813	207029	H46420	653.05	4603.26	7.05	2.00	0.00	13	239.18	Peripheral ner	Thymus	Thyroid
2815	51702	H22856	47.23	253.57	5.37	0.00	1.00	10	458.37	Small intestine	Foreskin	Muscle
2819	40580	R55130	4.88	25.65	5.26	1.00	0.00	13	144.44	Whole embryo	Brain	Pool
2820	195200	R91296	7.97	40.67	5.10	1.00	0.00	10	249.3	Pool	LID not found	Other
2821	22731	T75041	14.95	465.42	31.13	2.00	0.00			Peripheral ner	Ear	CNS
2824	131365	R23089	16.85	96.06	5.70	3.00	2.00			Placenta	LID not found	Other
2829	703581	AA278759	81.01	710.68	8.77	0.00	1.00	10	362.25	Bone marrow	Nose	Aorta
2830	84820	T74606	145.69	849.43	5.83	0.00	1.00	6	199.83	Aorta	Spleen	-
2832	212772	H70099	4.82	38.61	8.01	2.00	0.00	13	147.41	CNS	Uterus	Tonsil
2836	814054	AA465479	5.26	43.37	8.25	5.00	0.00	1	819.8	Umbilical cord	Gall bladder	Thymus
2850	796757	AA460727	96.74	632.23	6.54	0.00	1.00			Thymus	Skin	Umbilical cord
2852	246543	N77515	104.96	620.12	5.91	3.00	0.00	10	245.8	Aorta	Heart	Whole embryo
2860	471186	AA034213	73.56	426.01	5.79	1.00	0.00			Esophagus	Heart	Aorta
2866	712023	AA281616	3.09	16.09	5.21	0.00	1.00	16	432.9	Adipose	Breast	Tonsil
2882	123408	R00395	20.55	119.71	5.83	3.00	0.00			Germ Cell	Pool	Tonsil
2883	127098	R08109	10.81	66.23	6.13	1.00	0.00			Pool	LID not found	Other
2888	242687	H93550	4.17	25.20	6.05	1.00	0.00	2	190.04	Small intestine	Head and nec	Placenta
2892	142733	R71414	4.91	32.70	6.66	1.00	1.00	2	218.82	Pool	LID not found	Other
2893	327506	W32731	47.97	281.72	5.87	3.00	0.00	15	264.32	Tonsil	Uterus	Testis
2895	202621	H53791	4.76	29.69	6.24	3.00	0.00	10	378.6	Prostate	Pool	LID not found
2897	292612	N90368	142.16	1082.50	7.61	2.00	0.00	10	302.64	Testis	Pool	Brain
2898	108836	T77812	3.22	20.05	6.22	3.00	0.00					
2908	156270	R72661	26.97	157.44	5.84	5.00	0.00			Breast	Whole embryo	Tonsil
2920	207990	H60503	9.74	101.79	10.45	6.00	3.00	4	635.66	Pool	LID not found	Other
2923	127216	R08275	14.93	110.80	7.42	4.00	4.00			Pool	LID not found	Other
2924	141522	R73075	9.96	67.30	6.76	1.00	2.00			Placenta	LID not found	Other
2928	197637	R87194	137.97	907.45	6.58	4.00	0.00			Pool	LID not found	Other

Table 2A

2932	160730	H24616	7.81	44.90	5.90	1.00	0.00			Breast	LID not found	Other
2936	241171	H80423	8.70	62.63	7.20	3.00	0.00			Parathyroid	Breast	Germ Cell
2938	129331	R12267	19.07	150.41	7.89	3.00	0.00	19	264.67	Pool	LID not found	Other
2944	194906	R90957	12.00	143.03	11.92	6.00	0.00			Pool	LID not found	Other
2947	127766	R08690	35.47	233.77	6.59	3.00	0.00	5	366.2	Pool	LID not found	Other
2949	251250	H96634	6.87	70.96	12.52	3.00	0.00	7	208.72	Pooled	Foreskin	Muscle
2954	241539	H90603	69.25	587.51	8.48	5.00	0.00	1	85.46	Pool	LID not found	Other
2960	194985	R91004	24.84	325.60	13.11	6.00	5.00	3	227.76	Pool	LID not found	Other
2961	211202	H67686	193.76	1244.56	6.42	3.00	0.00	X	88.99	Pool	LID not found	Other
2962	246116	N52394	11.89	74.15	6.24	4.00	0.00					
2966	195037	R91031	12.01	155.50	12.94	5.00	5.00	7	675.72	Spleen	Testis	LID not found
2970	292482	N80361	26.69	146.11	5.47	2.00	0.00	1	94.68	Eye	Pool	Brain
2971	127409	R08761	22.48	216.48	9.63	5.00	0.00	8	463.92	Stomach	Pool	LID not found
2986	139226	R68721	78.49	478.38	6.09	3.00	0.00	3	643.74	Smooth musc	Larynx	Esophagus
2990	214614	H73661	35.76	224.01	6.26	3.00	0.00	3	446.88	Nose	Umbilical cord	Liver
2991	415178	W95104	2.17	14.15	6.53	4.00	1.00			Pool	LID not found	Other
2994	295389	W05000	74.27	492.35	6.63	1.00	0.00	5	158.34	Muscle	Breast	Pool
2997	245401	N77198	6.96	50.95	7.32	4.00	3.00			Pool	LID not found	Other
3001	212098	H66932	5.76	37.09	6.44	1.00	1.00			Pool	LID not found	Other
3005	243245	H95044	4.85	38.31	7.90	3.00	1.00	5	510.96	Pool	LID not found	Other
3009	295497	W23541	3.31	19.24	5.81	2.00	0.00			Pool	LID not found	Other
3011	809567	AA456611	27.81	173.02	6.22	1.00	0.00	6	117.06	Nose	Head and nec	Breast
3014	233419	H77707	15.20	125.29	8.25	4.00	3.00	2	232.14	CNS	Muscle	Tonsil
3015	756332	AA404276	56.84	455.79	8.02	6.00	0.00	3	191.53	Whole embryo	Tonsil	LID not found
3017	234080	H89004	31.02	264.66	8.53	1.00	3.00	22	49.13	Eye	Uterus	Pool
3021	243317	H95086	161.20	1617.25	10.03	3.00	2.00	4	835.64	Pool	Kidney	LID not found
3022	239711	H79650	10.95	136.03	12.42	4.00	5.00			Heart	-	Pool
3023	214563	H71224	23.34	229.49	9.83	5.00	0.00	17	322.97	Pool	LID not found	Other
3024	810754	AA457728	21.29	197.76	9.29	3.00	1.00			Gall bladder	Ovary	Pooled
3025	245784	N76873	46.42	299.06	6.44	1.00	0.00	3	402.8	Pool	LID not found	Other
3030	245534	N77321	8.35	43.04	6.78	1.00	1.00	8	404.82	Pool	LID not found	Other
3031	271378	N34751	9.16	70.64	7.71	6.00	0.00	1	293.66	Eye	Foreskin	LID not found
3033	233399	H77697	54.37	446.37	8.21	2.00	3.00	21	-10.98			
3038	134537	R27733	3.80	263.90	69.52	1.00	0.00			Placenta	Pool	LID not found
3048	245774	N76878	27.27	155.30	5.70	3.00	1.00	10	254.93			
3049	212712	H69653	67.41	474.67	7.04	4.00	3.00			Prostate	LID not found	Other
3055	268951	N26072	58.66	394.91	6.62	2.00	1.00	15	227.19			
3061	362894	AA018134	113.95	687.63	6.03	1.00	0.00	14	216.37	Thyroid	Breast	Pool
3063	126277	R06284	12.84	98.69	7.68	4.00	0.00	17	460.37	Adrenal gland	Pool	LID not found
3069	245409	N55012	104.92	582.10	5.55	2.00	0.00	10	188.13	-	Whole embryo	Liver
3071	195034	R88764	17.51	212.01	12.10	7.00	0.00					
3084	548957	AA115919	123.77	648.70	5.24	2.00	0.00	7	422.9	Epididymis	Small intestine	Lymph node
3090	823884	AA490680	10.94	58.73	5.37	1.00	0.00	22	87.89	Germ Cell	Testis	Breast
3100	213136	H89582	6.00	33.11	5.52	1.00	0.00			Adipose	Nose	Thymus
3102	245296	N72452	5.30	37.09	7.00	1.00	0.00			Adrenal gland	Pool	Tonsil
3106	240706	H80215	17.79	102.85	5.78	0.00	1.00	X	135.35			
3150	229365	H74265	4.25	24.78	5.83	1.00	0.00	1	661.1	Lymph	Nose	Adipose
3152	207794	H59000	3.40	39.81	11.69	1.00	0.00	12	236.8	Bone marrow	Spleen	Pool
3158	240009	H82419	56.27	305.55	5.43	1.00	0.00	X	238.33			
3169	126795	R07167	7.20	100.24	13.92	1.00	0.00	1	192.44	Germ Cell	Brain	Tonsil
3170	840842	AA486627	30.39	438.19	14.42	5.00	0.00	6	118.38	Nose	Thymus	Smooth muscle
3173	246765	N53169	55.02	308.72	5.61	1.00	0.00	11	373.32	Liver	Spleen	Pool
3183	416833	W86653	18.89	95.85	5.07	1.00	0.00	6	127.46	Gall bladder	Thyroid	Muscle
3185	249868	H84153	7.63	58.41	7.66	1.00	0.00	12	25.02	Adrenal gland	Thyroid	Heart
3201	220096	H82535	3.03	49.04	16.18	2.00	1.00			Eye	Brain	LID not found

Table 2A

3203	769232	AA450227	85.13	466.26	5.48	0.00	1.00	1	550.58	Marrow	Synovial mem	Cervix
3207	814306	AA459318	24.32	217.93	8.96	3.00	0.00	8	400.57	Small intestine	Stomach	Pancreas
3209	28475	R13434	28.18	158.75	5.63	1.00	0.00	1	189.67	Small intestine	Smooth musc	Gall bladder
3214	823590	AA497051	8.06	136.70	16.97	9.00	1.00					
3217	42373	R67147	2.00	19.14	9.59	2.00	0.00	16	191.31	Prostate	CNS	Lung
3220	897770	AA598508	16.06	632.20	39.37	13.00	1.00					
3222	592801	AA160852	4.64	94.31	20.34	4.00	0.00	14	207.23	Larynx	Nose	Pancreas
3231	897594	AA496837	41.59	230.99	5.55	1.00	0.00			Synovial mem	Skin	Esophagus
3234	809598	AA442964	31.29	206.43	6.60	2.00	0.00	6	118.71	Thymus	Skin	Adipose
3241	247816	N73030	53.87	284.92	5.29	1.00	1.00	9	373.87	Bone	CNS	Spleen
3242	80109	T63324	16.69	279.39	16.74	7.00	0.00	6	118.59			
3245	755506	AA419108	108.93	567.02	5.21	0.00	1.00	2	219.22	Stomach	Nose	Gall bladder
3247	767345	AA418564	7.17	44.04	6.14	2.00	0.00			CNS	Thyroid	Cervix
3250	824547	AA490920	19.55	103.99	5.32	1.00	0.00	16	99.33	Tonsil	Lymph	Breast
3252	841664	AA487560	167.19	1065.64	6.37	0.00	1.00	7	546.17	Adipose	Thyroid	Bone
3258	786067	AA448755	32.66	257.47	7.88	0.00	1.00	20	11.08	Lymph	Adrenal gland	Whole embryo
3264	544639	AA074677	13.25	115.35	8.71	4.00	0.00			Mouth	Ovary	Muscle
3265	202168	H52361	3.03	34.92	11.51	4.00	2.00			Pool	LID not found	Other
3266	138021	R63197	10.54	72.86	6.92	3.00	0.00	14	111.95	Whole embryo	Pancreas	Placenta
3267	121239	T96708	6.92	36.13	5.22	1.00	0.00			Testis	Colon	Heart
3271	196214	R92577	12.55	157.22	12.53	2.00	4.00	18	380.27	Pool	LID not found	Other
3272	207098	H48502	307.67	2229.97	7.24	5.00	0.00	12	246.56			
3273	246073	N55563	72.28	552.40	7.64	4.00	0.00			Adipose	Placenta	Pool
3276	134229	R31965	3.44	22.15	6.44	1.00	0.00			Placenta	Prostate	LID not found
3279	123506	R00628	4.61	44.43	9.64	3.00	0.00			Pool	LID not found	Other
3283	121355	T98780	16.60	126.34	7.61	4.00	1.00	3	97.09	Thymus	Tonsil	Pool
3285	292452	N68424	76.98	454.30	5.90	2.00	0.00	10	411.43	Pool	LID not found	Other
3287	123817	R00648	188.14	1165.32	6.19	3.00	0.00	X	245.06			
3291	121341	T98870	6.49	37.92	5.85	2.00	0.00	2	343.06	Prostate	Pool	Brain
3295	211024	H65775	26.50	208.43	7.31	4.00	0.00	19	-10.87	Skin	Pool	LID not found
3296	139764	R62241	108.10	691.48	6.52	1.00	0.00	2	188.44	Placenta	Pool	Brain
3301	120544	T95503	2.25	11.35	5.04	1.00	0.00	6	531.65	Whole embryo	-	Pool
3304	139835	R62288	10.58	83.44	7.90	1.00	0.00	4	191.33	Adipose	Aorta	Stomach
3307	121412	T96909	43.61	311.39	7.14	4.00	0.00			Pool	LID not found	Other
3315	121415	T96919	12.00	98.20	8.18	0.00	2.00	X	245.06	Pool	LID not found	Other
3317	356162	W95346	5.20	57.48	11.04	1.00	0.00			Germ Cell	Testis	Heart
3318	307255	W21482	9.09	65.35	7.19	5.00	0.00	1	92.78	Ovary	Breast	Tonsil
3320	142884	R71190	4.16	60.30	14.50	5.00	2.00	10	32.59	Placenta	Heart	LID not found
3322	261587	N24268	29.01	183.84	5.64	2.00	0.00	4	430.65	Placenta	Aorta	Testis
3323	207379	H58884	70.32	458.49	6.52	3.00	0.00	3	732.12			
3329	470379	AA031398	8.23	71.20	8.65	3.00	1.00	3	121.9			
3332	135450	R32751	97.58	883.38	9.05	4.00	0.00	8	337.62			
3336	138999	R62853	5.57	32.68	5.87	1.00	2.00			Placenta	Brain	Pool
3340	135454	R32754	6.77	39.47	5.83	1.00	0.00	15	244.61	Placenta	Lymph	Ovary
3343	244058	N45440	3.36	22.13	6.58	0.00	2.00	2	567.49			
3347	121206	T97076	15.26	105.16	6.89	4.00	2.00			Heart	Pool	LID not found
3348	135203	R32939	13.55	74.36	5.49	0.00	3.00			Pooled	Placenta	Lung
3353	197933	R96358	81.26	418.18	5.15	1.00	0.00	7	94.72	Eye	Kidney	Pool
3361	295600	N66843	6.53	54.17	8.29	7.00	0.00	9	25.86	Pool	LID not found	Other
3365	204098	H55897	55.60	1040.08	18.71	6.00	5.00	16	438.12	Pool	LID not found	Other
3366	295324	W04231	79.49	541.43	6.81	2.00	0.00	5	373.94	-	Kidney	Pool
3368	487819	AA043494	3.41	17.55	5.15	1.00	0.00	8	249.17	Uterus	Synovial mem	Kidney
3374	233214	H75898	116.64	721.17	6.18	1.00	0.00			Pool	LID not found	Other
3377	201519	R97269	7.31	112.00	15.33	4.00	2.00	1	353.98	Foreskin	Tonsil	Pool
3381	203791	H56207	50.48	298.06	5.90	1.00	0.00	17	322.26	Nose	Pool	LID not found

Table 2A

3384	309515	N94385	2.64	45.06	17.09	2.00	0.00	19	101.92	Ignore	Bone	Pancreas
3386	296010	N67041	76.50	428.36	5.46	1.00	0.00			Foreskin	Eye	Heart
3387	344133	W73792	112.51	704.79	8.26	1.00	0.00			Pancreas	Colon	Heart
3390	230341	H80958	14.08	90.95	6.46	5.00	1.00			Pool	LID not found	Other
3391	343646	W59471	1.09	8.98	8.27	1.00	0.00	17	347.35	Gall bladder	Heart	Uterus
3393	200418	R97234	23.46	228.54	9.74	0.00	3.00	3	461.06	Pool	LID not found	Other
3395	108330	T70850	1.49	15.29	10.25	3.00	0.00			Adipose	Testis	Breast
3397	203605	H56424	14.15	98.25	6.94	6.00	1.00	17	272.44	Pool	LID not found	Other
3398	243460	N48213	22.41	136.79	6.10	2.00	0.00			Marrow	Ovary	Blood
3401	245386	N54993	12.82	265.33	20.69	6.00	5.00	15	293.15	Pool	LID not found	Other
3404	190940	H38088	28.42	178.78	6.29	1.00	0.00			Cervix	Stomach	Foreskin
3405	203850	H56438	28.60	200.93	7.03	4.00	0.00	10	176.79	Pool	LID not found	Other
3409	293128	N91997	5.30	31.43	5.94	2.00	1.00			Pool	LID not found	Other
3412	758356	AA404288	9.57	59.37	6.20	1.00	0.00	4	444.57	Head and nec	Thymus	Eye
3414	293356	N92034	96.84	593.71	6.13	3.00	0.00	20	193			
3421	203956	H56679	2.51	17.91	7.14	1.00	0.00	14	106.8	Pool	LID not found	Other
3426	294167	W01993	18.46	111.09	5.71	2.00	0.00					
3427	135220	R32944	26.97	146.06	5.49	1.00	0.00	2	466.93	Peripheral nervous system		Ovary
3429	234469	H95358	6.83	36.19	5.30	1.00	0.00					
3433	243194	H94571	3.34	17.83	5.27	0.00	1.00			Pool	LID not found	Other
3437	204558	H56981	51.27	369.39	7.21	3.00	0.00			Pool	LID not found	Other
3441	206781	R98074	12.65	156.14	12.35	6.00	5.00					
3442	297437	W03688	43.11	357.35	8.29	3.00	0.00	4	134.94	Pool	LID not found	Other
3444	344588	W73140	2.78	102.48	36.91	6.00	1.00			Larynx	Heart	Testis
3446	310034	W24161	6.82	47.02	6.90	4.00	0.00			Umbilical cord	Foreskin	Prostate
3450	293356	N92035	26.05	163.02	6.26	1.00	0.00			Heart	LID not found	Other
3451	229580	HG0011	39.52	232.23	5.88	1.00	0.00	12	500.87	Blood	Tonsil	Whole embryo
3453	204624	H57017	42.99	263.42	6.13	3.00	0.00			Pool	LID not found	Other
3463	183476	H45617	35.02	384.82	10.99	3.00	0.00			Bone marrow	Skin	Breast
3467	134270	R31168	24.16	430.88	17.83	1.00	1.00	1	695.02	Small Intestine	Thyroid	Parathyroid
3470	767638	AA418251	3.03	25.64	8.47	1.00	0.00	7	152.22	Thyroid	Umbilical cord	Pool
3472	756480	AA438406	7.11	48.64	6.84	2.00	0.00	17	325.76	Whole embryo	Liver	Tonsil
3475	810063	AA465021	2.64	22.95	8.10	1.00	0.00	16	26.14	Cervix	Blood	Lymph
3480	134748	R28294	40.70	207.56	5.10	1.00	0.00			Blood	Kidney	Muscle
3482	136188	R33154	9.64	1008.01	102.48	4.00	1.00	4	34.95	Uterus	Heart	Placenta
3492	49518	H15707	198.87	1000.90	5.08	1.00	0.00	8	367.23	Smooth musc	Umbilical cord	Pancreas
3494	288896	N62620	24.35	296.90	12.19	2.00	1.00	1	738.14	CNS	Eye	Colon
3499	234191	H64324	18.88	143.44	7.60	1.00	1.00	2	120.76	Adipose	Tonsil	Bone
3503	132122	R26070	15.52	93.92	6.05	1.00	0.00	1	132.58	Foreskin	Bone	Brain
3512	753467	AA406551	19.44	195.97	10.08	0.00	1.00	1	142.59	-	Adipose	Nose
3514	261971	N27227	0.63	7.92	9.54	1.00	0.00	16	490.28	Larynx	Adrenal gland	Germ Cell
3516	366558	AA026631	13.90	71.52	5.15	0.00	1.00	5	524.57	Smooth muscle		Pancreas
3522	754509	AA410591	6.56	48.64	7.41	1.00	1.00	7	554.6	Foreskin	Pool	Placenta
3526	199945	R97066	44.83	572.27	12.77	1.00	2.00	20	212.78	Placenta	Lymph node	Aorta
3530	296880	W01240	20.92	105.51	5.04	1.00	0.00	X	354.25	Thyroid	CNS	Liver
3538	200814	R98851	9.24	107.94	11.68	1.00	2.00	3	571.11	Small intestine	Smooth musc	Kidney
3544	562927	AA085597	39.89	231.92	5.81	1.00	0.00	3	680.68	Thymus	Foreskin	Gall bladder
3556	841278	AA486836	13.35	146.85	11.00	2.00	0.00			Parathyroid	Adrenal gland	Lung
3561	146421	H12312	21.72	197.39	9.09	3.00	3.00	4	249.05	Placenta	Tonsil	LID not found
3576	292731	N91426	25.94	157.35	6.07	1.00	1.00			Cervix	Ovary	Kidney
3580	122822	T89688	28.51	168.38	5.91	0.00	2.00	17	96.5	Gall bladder	Stomach	Adrenal gland
3588	112885	T87139	24.97	140.54	5.63	1.00	2.00			Blood	Tonsil	Pool
3594	842863	AA469261	52.98	307.36	5.80	3.00	0.00	8	499.22	Larynx	Peripheral ner	Nose
3603	530814	AA070226	187.57	1242.16	6.62	1.00	0.00	5	155.62	Small intestine		Liver
3605	897669	AA496810	30.52	176.68	5.79	2.00	0.00			Bone	Whole embryo	Eye

Table 2A

3626	78869	T51182	9.45	54.67	5.78	1.00	0.00			Lymph node	Nose	Ovary
3629	824568	AA490981	14.10	103.31	7.33	2.00	0.00	19	67.65	Prostate	Blood	Breast
3639	814526	AA459588	12.01	123.11	10.25	4.00	1.00	20	353.84	Thymus	Ovary	Blood
3649	122345	T99191	2.44	27.91	11.42	3.00	0.00	7	132.75	Eye	Pool	LID not found
3652	248535	N59766	44.57	265.36	5.95	3.00	0.00	16	413.63	Tonsil	Uterus	Testis
3653	469762	AA027964	2.11	19.23	9.11	0.00	2.00			Uterus	Brain	LID not found
3654	111884	T84998	2.96	14.84	5.00	1.00	0.00	2	285.51	Breast	Muscle	-
3657	275612	R93354	3.97	31.30	7.88	2.00	0.00					
3664	195358	R88539	23.61	239.05	10.13	5.00	0.00			Whole embryo-		Kidney
3666	207813	H59056	4.73	140.02	29.63	2.00	0.00	16	101.49	Pool	LID not found	Other
3670	121072	T96523	15.40	85.85	5.58	1.00	1.00	17	313.98			
3672	195381	R88999	29.51	287.96	9.76	5.00	0.00	10	354.68	Pool	LID not found	Other
3674	234318	H95238	51.27	376.88	7.35	4.00	0.00	6	569.13	CNS	Pool	Testis
3688	195553	R91821	11.20	188.27	16.81	6.00	5.00	21	263.63	Pool	LID not found	Other
3691	127514	R08868	46.71	325.72	6.97	3.00	0.00	3	378.75	Pool	LID not found	Other
3696	195546	R89218	8.03	57.99	7.22	2.00	4.00	9	327.26	Pool	LID not found	Other
3699	127542	R08883	35.08	273.00	7.78	4.00	0.00			Pool	LID not found	Other
3700	244299	N75715	20.92	170.05	8.13	3.00	0.00			Bone	Pool	Lung
3704	242011	H93319	63.22	645.51	10.21	6.00	4.00	1	249.15	Pool	LID not found	Other
3708	113431	T78571	16.94	120.58	7.12	2.00	0.00			Pool	LID not found	Other
3710	111200	T84381	22.65	165.90	7.33	5.00	0.00			Pooled	Pool	Kidney
3711	130758	R22088	4.18	28.71	6.87	4.00	0.00			Placenta	Pool	LID not found
3712	195784	R89285	25.92	255.51	9.86	5.00	0.00			Pool	LID not found	Other
3713	308989	W25368	4.33	150.87	34.82	17.00	1.00	1	562.73	Esophagus	Breast	Prostate
3715	127943	R09153	38.48	235.67	6.13	2.00	2.00			Thyroid	Parathyroid	Spleen
3719	130791	R22113	13.46	113.53	8.43	6.00	0.00	7	424.67			
3722	113538	T79129	14.65	110.68	7.56	3.00	0.00			Foreskin	Pool	Testis
3727	130801	R22085	29.02	180.51	6.22	2.00	2.00			Breast	Lung	Placenta
3730	247710	N58198	248.83	1359.00	5.46	3.00	0.00	22	71.96	Pool	LID not found	Other
3732	292498	N91290	7.16	44.65	6.23	3.00	0.00	17	382.93	Pool	LID not found	Other
3736	195568	R89471	4.55	29.41	6.46	3.00	0.00	14	251.63	Pool	LID not found	Other
3739	127710	R09498	98.35	647.47	6.58	3.00	0.00			Pool	Colon	LID not found
3741	470061	AA029041	27.88	155.53	5.58	1.00	0.00	3	550.79		Skin	-
3743	130824	R22239	54.71	368.58	6.70	1.00	1.00			Placenta	Heart	Breast
3745	234419	H95342	1.76	16.53	9.41	1.00	0.00			Tonsil	Pool	LID not found
3747	257391	N30708	60.87	536.61	8.82	4.00	0.00	10	477.19	Parathyroid	Blood	Eye
3750	132871	R27505	13.70	143.05	10.44	3.00	2.00	5	650.68	Adrenal gland	Pooled	CNS
3755	194524	R86333	87.50	522.40	5.97	2.00	0.00	2	742.57	Whole embryo	Testis	Foreskin
3758	246194	N77006	56.36	330.01	5.85	3.00	0.00			Blood	Germ Cell	Placenta
3760	356835	W84612	7.10	50.26	7.07	2.00	0.00			Thymus	Pooled	Aorta
3766	247456	N64285	5.49	57.99	10.57	1.00	0.00			Pool	LID not found	Other
3768	385177	AA024666	13.77	76.55	5.56	1.00	0.00			Pooled	Parathyroid	-
3769	229997	H71314	4.12	27.39	6.64	2.00	0.00			Pool	LID not found	Other
3772	490755	AA133167	2.70	16.21	6.01	1.00	0.00	22	143.47	Peripheral ner	Uterus	Brain
3774	248698	N76306	15.47	126.08	8.09	5.00	0.00			Pool	LID not found	Other
3779	428798	AA004671	0.94	5.58	5.92	1.00	0.00			Pancreas	Cervix	Umbilical cord
3783	296095	N73611	13.48	69.57	5.16	0.00	1.00	13	320.82	Umbilical cord	Cervix	Foreskin
3785	213509	H72247	5.17	52.72	10.20	3.00	0.00			Pool	LID not found	Other
3788	811066	AA485443	15.02	81.86	5.45	1.00	0.00	12	247.44	Lymph node	Adipose	Umbilical cord
3790	292770	N63646	3.42	25.89	7.57	1.00	0.00	1	539.65	Stomach	Pooled	Lung
3792	277003	N34987	3.11	20.99	6.76	2.00	0.00	16	369.05	CNS	Parathyroid	Lung
3793	213698	H72290	42.19	265.08	6.28	3.00	0.00	4	334.32	Prostate	Pool	LID not found
3798	293584	N94143	11.62	82.55	7.10	3.00	0.00			Adipose	Pool	LID not found
3800	429799	AA009773	10.37	61.56	5.93	1.00	0.00			Liver	Germ Cell	Colon
3801	213535	H72259	14.24	101.45	7.13	6.00	0.00	18	474.57	Pool	LID not found	Other

Table 2A

3806	293835	N95107	18.39	138.39	7.53	5.00	0.00			Adipose	Pool	LID not found
3809	214823	H71854	36.39	234.35	6.45	3.00	2.00	12	485.73	Pool	LID not found	Other
3819	198256	R94456	25.79	196.78	7.63	5.00	0.00	5	283.38	Stomach	Umbilical cord	Spleen
3822	294740	N69252	10.64	96.38	9.06	1.00	0.00					
3826	292559	N80384	9.28	64.38	6.94	1.00	4.00			Pool	LID not found	Other
3829	243385	N48130	133.02	756.41	5.69	1.00	2.00	22	175.49	Pool	LID not found	Other
3830	297919	N70072	35.59	178.79	5.02	1.00	0.00	19	66.07	Epididymis	Brain	Heart
3834	212620	H70554	2.53	26.50	10.49	0.00	1.00			Pool	Colon	Brain
3840	320712	W31675	4.40	39.67	9.01	4.00	0.00	15	344.93	CNS	Lymph	Parathyroid
3848	243875	N50014	91.43	897.64	9.82	4.00	0.00	20	293.98	Eye	Breast	Parathyroid
3852	813707	AA453774	4.32	169.71	39.25	0.00	1.00	1	630.42	Stomach	Kidney	Tonsil
3876	727792	AA393408	5.84	63.29	10.83	1.00	0.00			Thyroid	Stomach	Testis
3887	289502	N79669	168.72	877.18	5.20	1.00	0.00	1	247.44	Epididymis	Gall bladder	CNS
3902	187280	R90744	3.16	22.64	7.16	1.00	0.00	1	15.07	Blood	Placenta	Pool
3908	289337	N92646	19.04	2000.27	105.08	11.00	0.00	14	278.45			
3912	813714	AA453850	54.89	354.12	6.45	1.00	0.00	2	627.13			
3919	119914	T94293	56.45	466.48	8.26	4.00	0.00	16	170.16			
3940	841470	AA487346	22.82	169.89	7.51	2.00	0.00	15	263.4	Synovial mem	Nose	Blood
3942	310105	W24246	6.79	37.19	5.48	1.00	0.00	10	426.08	Small Intestine	Stomach	CNS
3944	130843	R22306	2.82	16.94	6.00	1.00	0.00			Ignore	Brain	Breast
3945	301061	W07798	9.88	51.16	5.18	1.00	0.00	21	247.7	Stomach	Germ Cell	Kidney
3948	898035	AA598950	76.84	550.84	7.17	2.00	0.00	8	31.44	Thyroid	Small Intestine	Skin
3961	134783	R31701	12.88	99.79	7.78	2.00	0.00	1	294.09	Ear	Adrenal gland	Whole embryo
3977	361204	AA017526	6.46	33.28	5.15	1.00	0.00			Ear	Thymus	Whole embryo
3981	70827	T46924	3.54	1338.88	378.45	6.00	0.00	7	675.52	Placenta	Uterus	Kidney
3987	841679	AA488699	21.70	276.81	12.75	1.00	0.00			Pancreas	Nose	Thyroid
3989	823775	AA490256	16.86	177.19	10.51	1.00	0.00	1	339.21	Umbilical cord	CNS	Bone
4003	825085	AA489246	7.02	195.43	27.84	22.00	1.00			Pancreas	Gall bladder	Colon
4010	815501	AA456888	7.77	47.44	6.11	2.00	0.00			Head and nec	Adrenal gland	Pooled
4015	712341	AA405000	21.75	483.45	22.22	9.00	0.00	6	634.12	Thymus	Spleen	Thyroid
4018	203132	H54629	11.87	447.40	37.70	6.00	0.00	3	643.74	Smooth musc	Larynx	Esophagus
4025	564050	AA114226	5.52	33.51	6.07	1.00	0.00	9	149.77	Smooth musc	Stomach	Breast
4027	321386	W32272	5.04	41.69	8.27	1.00	0.00	5	368.81	Thyroid	Ear	Parathyroid
4028	69672	T53626	6.48	64.26	9.92	0.00	1.00	16	401.58	Smooth musc	Placenta	Umbilical cord
4032	235155	H79353	7.53	62.04	8.24	5.00	0.00	1	588.76	Stomach	Blood	Placenta
4035	121214	T97060	1.88	10.76	5.43	1.00	0.00	2	650.84	Pool	LID not found	Other
4040	139051	R62926	1.72	16.20	9.42	2.00	0.00			Placenta	Whole embryo	Lung
4043	137793	R68537	4.64	45.25	9.74	1.00	0.00	1	594.85	Placenta	Lung	Kidney
4047	124128	R01348	4.60	38.45	8.36	1.00	0.00			Tonsil	Pool	Heart
4049	247901	N77671	125.22	944.82	7.55	5.00	0.00			Breast	Eye	Pool
4056	137981	R63134	6.50	51.40	7.91	1.00	0.00	4	355.71	Brain	Placenta	LID not found
4060	136114	R33265	4.56	28.58	6.27	2.00	0.00	3	560.21	Adrenal gland	Placenta	Tonsil
4064	137989	R63137	5.87	47.56	8.10	2.00	0.00	19	180.72	Parathyroid	Placenta	Kidney
4067	247216	N59057	25.34	257.17	10.15	2.00	2.00			Neural	Synovial mem	Skin
4069	347687	W81582	78.85	403.17	5.26	1.00	0.00	4	301.37			
4070	309092	N95381	27.55	172.23	6.25	1.00	0.00	6	457.37	Placenta	Germ Cell	Pancreas
4078	201301	R99573	10.66	74.59	6.99	1.00	0.00	19	64.49	Pool	-	Lung
4085	140197	R66101	3.32	52.65	15.86	3.00	0.00	6	42.15	Head and nec	Pooled	Heart
4088	138579	R63295	6.40	63.99	10.00	2.00	0.00			Placenta	LID not found	Other
4092	135999	R33570	14.14	101.19	7.16	3.00	0.00			Pooled	Aorta	Germ Cell
4096	141209	R66533	25.56	253.22	9.91	2.00	3.00			Bone	Colon	Whole embryo
4099	121501	T97309	12.11	87.60	7.23	3.00	2.00			Pool	LID not found	Other
4107	121808	T97427	12.66	124.60	9.84	6.00	2.00	1	638.07	Pool	LID not found	Other
4116	135853	R33699	7.53	61.45	8.16	1.00	0.00	4	422.24	Placenta	LID not found	Other
4124	136909	R39730	150.48	1600.38	10.63	1.00	0.00			Placenta	LID not found	Other

Table 2A

4125	468019	AA053285	2.22	16.91	7.63	1.00	0.00	10	45.1	Uterus	Liver	Brain
4129	206849	R98107	21.08	131.91	6.26	1.00	0.00	11	159.67	Pool	LID not found	Other
4130	309685	W30810	4.80	29.05	6.05	1.00	0.00	3	121.68	Colon	-	Pancreas
4134	120701	T95668	7.57	40.56	5.36	0.00	1.00	15	258.67	Foreskin	Placenta	Uterus
4137	200780	R98191	12.58	145.94	11.60	4.00	5.00	14	276.5	Pool	Whole embryo	Testis
4139	840683	AA488072	9.23	150.41	16.29	0.00	1.00	10	432.99	Heart	Lung	Pool
4140	261836	H98856	12.97	81.78	6.31	0.00	2.00			Small intestine	Cervix	Gall bladder
4144	782635	AA447569	16.86	116.75	6.93	3.00	0.00			Bone marrow	Larynx	Esophagus
4149	204814	H57111	9.53	53.97	5.67	3.00	0.00	10	439.93	Heart	Testis	Pool
4150	132789	R27412	5.16	42.80	8.30	4.00	0.00	7	494.74	Placenta	Muscle	Pool
4151	586898	AA129089	8.98	35.65	5.11	1.00	0.00	3	160.78	Cervix	Colon	Blood
4153	230191	H94849	7.65	91.50	11.96	4.00	5.00	10	536.56	Pool	LID not found	Other
4156	488422	AA044662	7.03	47.35	6.73	2.00	0.00	19	32.22	Smooth musc	Adrenal gland	Foreskin
4157	204688	H57273	9.16	287.13	31.34	7.00	2.00	11	289.86	Pool	LID not found	Other
4158	345751	W72621	7.76	46.42	5.99	1.00	0.00	3	211.28	Smooth musc	Placenta	Uterus
4164	324712	AA284234	3.74	23.64	6.32	1.00	0.00	11	255.63	Pooled	-	Blood
4165	204444	H58001	31.62	169.79	5.37	1.00	0.00	15	16.25	Pool	LID not found	Other
4171	128632	R10043	3.37	18.09	5.37	1.00	0.00	10	434.43	Kidney	Breast	Colon
4173	209468	H65231	12.17	107.52	8.83	2.00	4.00			Pool	LID not found	Other
4174	209381	H64095	4.18	32.30	7.72	1.00	0.00	3	198.24	Thyroid	Pool	Heart
4175	770593	AA434160	0.63	3.66	5.81	0.00	1.00	1	77.59	Lung	Ovary	Uterus
4176	810558	AA464568	87.06	1082.48	12.43	1.00	1.00	19	235.02	Gall bladder	Ovary	Skin
4178	293500	N94060	5.97	32.51	5.44	1.00	0.00			Aorta	Germ Cell	Pancreas
4180	268211	N29986	3.64	44.57	12.24	4.00	0.00			Foreskin	Germ Cell	LID not found
4189	234647	H77736	9.38	59.93	6.39	5.00	0.00			Aorta	Tonsil	Lung
4191	783697	AA446839	18.58	134.35	7.23	1.00	0.00	14	39.26	Peripheral nervous system		Uterus
4192	1048810	AA621342	22.57	354.24	15.69	1.00	0.00	1	615.85	Umbilical cord	Thymus	Pooled
4193	201334	R98591	27.18	262.10	9.64	7.00	0.00			Pool	LID not found	Other
4195	130120	R21425	20.57	106.94	5.20	0.00	1.00				Cervix	Stomach
4199	136780	R36070	107.78	626.68	5.81	1.00	1.00	5	473.63	Placenta	LID not found	Other
4205	204469	H58574	29.59	289.99	9.80	6.00	5.00	20	117.11	Pool	LID not found	Other
4207	146743	H12777	8.59	63.82	7.43	4.00	0.00	2	96.76	Lung	LID not found	Other
4208	66491	R16134	5.34	67.51	12.64	2.00	0.00			Parathyroid	Kidney	Uterus
4209	206882	R98905	19.32	100.72	5.21	0.00	1.00	8	78.97	Pool	LID not found	Other
4210	293675	N94274	12.54	120.05	9.58	3.00	3.00			Pool	LID not found	Other
4212	277138	N40919	2.48	13.50	5.46	1.00	0.00					
4214	345342	W76645	58.40	323.85	5.74	2.00	2.00	4	672.08	Heart	Testis	LID not found
4215	155072	R71393	2.56	74.61	29.10	1.00	0.00	1	61.17	Breast	Germ Cell	Kidney
4217	206885	R98913	10.72	87.46	8.16	4.00	0.00			Pool	LID not found	Other
4221	207370	H58834	8.67	65.81	7.59	4.00	3.00	2	318.41	Pool	LID not found	Other
4226	470393	AA031513	6.34	1316.45	207.75	12.00	1.00	11	348.77	Gall bladder	Pancreas	Uterus
4228	511428	AA126115	4.84	114.71	23.69	13.00	0.00			Head and nec	Esophagus	Prostate
4235	341310	W58032	7.07	41.92	5.93	1.00	0.00	2	587.59	Eye	Bone	Placenta
4244	727292	AA401693	8.70	67.92	7.81	2.00	0.00	12	45.59	Gall bladder	Kidney	Testis
4248	725680	AA399334	4.31	53.22	12.35	10.00	0.00	20	333.71	Germ Cell	Ovary	Prostate
4250	589115	AA143201	224.97	1902.36	8.46	0.00	1.00	11	351.63	Umbilical cord	Larynx	Esophagus
4255	309161	N99243	0.98	5.31	5.35	0.00	1.00	17	371.63	Lung	Eye	Kidney
4256	183200	H44958	66.69	334.70	5.02	1.00	0.00	15	271.57	Brain	LID not found	Other
4260	72050	T52435	107.26	1045.66	9.75	0.00	1.00	11	272.9	Thymus	Ovary	Skin
4275	741139	AA402207	3.77	243.17	64.45	17.00	0.00	20	261.13	Nose	Bone	Ovary
4282	667482	AA227594	2.85	781.29	274.41	11.00	2.00	2	334.7	Ear	Brain	Kidney
4310	346552	W74377	5.38	40.76	7.57	1.00	0.00			Marrow	Blood	Breast
4312	131639	R24635	5.59	571.41	102.25	15.00	0.00	11	262.87	Cervix	Ovary	Placenta
4320	381931	AA058828	2.22	13.36	6.02	1.00	0.00	13	78.13	Pooled	Placenta	Pool
4321	71727	T51350	9.85	55.59	5.64	1.00	0.00	1	146.12	Spleen	Pool	CNS

Table 2A

4322	49873	H28922	0.90	6.47	7.16	1.00	0.00	13	329.7	Synovial mem	Adipose	Breast
4323	787861	AA452376	7.02	48.04	6.84	1.00	0.00	12	277.88	Smooth musc	Aorta	Muscle
4324	124052	R02800	2.92	23.38	8.01	1.00	0.00			Pool	LID not found	Other
4328	132142	R26184	7.16	68.24	9.54	1.00	0.00	7	152.54	Placenta	Aorta	Eye
4340	120343	T97139	3.59	22.14	6.17	1.00	0.00			Pooled	Bone	Pool
4347	625923	AA186901	23.06	164.27	7.12	0.00	1.00	14	16.43		Adipose	Adrenal gland
4351	809464	AA443093	6.07	108.14	17.82	3.00	0.00	10	529.52	Cervix	Ear	Skin
4360	161992	H26176	45.02	247.82	5.50	1.00	1.00	10	436.45	Head and nec	Stomach	Breast
4393	787016	AA463565	21.12	118.97	5.63	2.00	0.00	1	65.95	Gall bladder	Foreskin	Parathyroid
4396	110503	T82817	47.17	339.52	7.20	0.00	2.00	11	240.08			
4397	785605	AA448998	51.23	508.87	9.93	3.00	0.00	16	170.16	Neural	Smooth musc	Placenta
4405	840940	AA486626	282.98	7043.36	24.89	2.00	0.00	8	439.33	Ear		Head and neck
4412	140515	R66057	30.54	455.14	14.90	8.00	3.00			Placenta	Pool	LID not found
4413	361974	AA001449	12.23	323.96	26.49	3.00	0.00	7	624.62	Ear	Adrenal gland	Parathyroid
4414	72391	T51689	7.94	161.34	20.33	13.00	0.00					
4418	248624	N78263	2.16	13.50	6.24	0.00	1.00	15	167.89	Ear	Muscle	Pool
4420	139189	R68706	96.86	677.35	6.99	3.00	0.00	11	272.02			
4424	209583	H97748	20.35	173.21	8.51	3.00	0.00	19	250.6	Pool	LID not found	Other
4427	198961	H83233	55.12	382.12	6.93	1.00	0.00	2	198.38	Testis	Pool	Whole embryo
4428	139250	R68736	28.75	502.50	17.48	6.00	5.00			Brain	Prostate	Placenta
4432	184670	R88862	5.87	30.28	5.16	1.00	0.00			Pool	LID not found	Other
4433	210698	H66877	7.36	39.07	5.31	0.00	1.00	9	350.75	Thyroid	Pooled	Eye
4435	128118	R09870	2.91	14.79	5.08	1.00	0.00	8	327.75	Pool	LID not found	Other
4440	211319	H66650	9.03	91.86	10.18	2.00	3.00	1	387.28	Pool	LID not found	Other
4442	293417	N92134	130.10	916.66	7.05	3.00	0.00			-	Pool	LID not found
4446	194921	R91060	4.37	32.72	7.48	2.00	4.00			Pool	LID not found	Other
4456	251461	H98001	9.54	50.74	5.32	1.00	0.00			Foreskin	Tonsil	Pancreas
4461	292833	N90491	14.03	188.93	13.47	6.00	0.00	1	81.13	Thymus	Colon	Breast
4462	144852	R78527	121.99	615.16	5.04	1.00	0.00	2	229.2	CNS	Pooled	Whole embryo
4464	195052	R91176	31.62	652.86	20.65	6.00	5.00			Thyroid	Pool	Whole embryo
4468	470348	AA029361	53.50	897.06	16.77	4.00	4.00			Pancreas	Breast	Lung
4469	298783	W01171	41.02	270.05	6.58	5.00	0.00			Whole embryo	Cervix	Eye
4470	111722	T91088	1.95	11.52	5.90	1.00	0.00			Pool	LID not found	Other
4471	130572	R22420	6.40	32.92	5.14	1.00	0.00			Tonsil	Heart	Lymph
4477	741841	AA402879	13.06	100.83	7.72	2.00	1.00			Ignore	Skin	Germ Cell
4480	195091	R91244	22.28	407.93	18.31	6.00	5.00			Pool	LID not found	Other
4492	248306	N78103	19.14	157.51	8.23	5.00	0.00	3	664.2	Ear	Breast	Pool
4496	195139	R91271	26.88	380.59	14.16	6.00	5.00	9	404.02	Pool	LID not found	Other
4498	210923	H70862	11.51	63.48	5.52	1.00	0.00	6	569.46	Pool	LID not found	Other
4503	130977	R22926	50.11	260.63	5.20	1.00	0.00			Esophagus	Placenta	Prostate
4507	128893	R10311	2.99	17.48	5.85	1.00	0.00			Pool	Kidney	LID not found
4510	111825	T84865	32.44	226.10	6.97	1.00	3.00					
4512	195974	R92649	32.93	277.38	8.42	1.00	3.00			Pool	LID not found	Other
4517	243405	N49436	177.13	1055.80	5.96	3.00	0.00	8	565.78			
4518	296041	W02424	41.53	500.26	12.05	4.00	5.00	4	558.69	Foreskin	Pool	LID not found
4519	327221	AA284305	2.43	13.32	5.47	1.00	0.00			Heart	LID not found	Other
4521	232723	H72700	56.50	462.62	8.19	2.00	0.00	1	705.71	Pool	LID not found	Other
4529	235026	H73304	55.65	308.83	5.55	1.00	0.00	17	322.28	Ovary	Pool	LID not found
4531	126239	R08372	10.28	64.93	6.32	1.00	0.00	11	220.06			
4532	504300	AA149640	2.93	15.54	5.31	1.00	0.00	13	83.11			
4534	298182	W02630	6.55	33.19	5.07	1.00	0.00	9	422.75	Blood	Tonsil	Pooled
4535	341566	W58368	8.33	254.68	30.58	0.00	2.00	5	504.31	Placenta	Heart	Whole embryo
4542	295514	W23548	134.96	977.10	7.24	3.00	0.00			Pool	LID not found	Other
4543	135752	R33082	4.99	43.96	8.82	2.00	0.00	6	150.71	Blood	Placenta	Pool
4545	244784	N54401	12.56	101.24	8.06	1.00	1.00	6	391.02	Bone	Eye	Foreskin

Table 2A

4550	796198	AA461108	4.86	97.97	20.14	6.00	5.00	13	297.84			
4557	130027	R19406	127.45	858.30	6.73	3.00	0.00	14	192.96	Prostate	Pool	LID not found
4558	301678	N79558	45.80	914.31	19.96	6.00	5.00	14	207.23	Lung	-	LID not found
4561	293990	N95656	73.34	583.30	7.68	5.00	0.00	1	695.13	Pool	LID not found	Other
4562	139558	R62339	3.30	16.00	5.45	1.00	0.00			Pooled	Tonsil	Placenta
4565	286180	W00899	51.70	346.25	6.70	3.00	0.00			Germ Cell	Lymph	Pancreas
4566	121420	T97257	49.03	296.34	6.04	1.00	0.00	3	141.89	Bone	Testis	Parathyroid
4567	280266	N49224	4.76	26.00	5.46	2.00	0.00	9	410.91	Eye	CNS	Breast
4571	809694	AA454702	3.87	130.14	33.66	4.00	0.00	15	258.04	Synovial mem	Eye	Bone
4573	347036	W81128	5.22	78.40	15.02	10.00	0.00			Thymus	Colon	Aorta
4579	271038	N34362	14.81	91.74	6.20	1.00	0.00	1	592.98	Adrenal gland	Aorta	Smooth muscle
4586	212406	H69471	70.98	408.97	5.76	1.00	3.00			Tonsil	Pool	LID not found
4590	235008	H79130	22.76	262.62	11.54	6.00	5.00	7	20.09	Pooled	Brain	Uterus
4593	230180	H74330	28.49	153.65	5.39	3.00	0.00	5	357.64			
4605	243989	N45364	9.36	60.96	6.51	1.00	4.00	6	129.58			
4606	344141	W69791	35.47	636.95	17.96	6.00	5.00					
4607	810809	AA458882	9.90	83.67	8.47	1.00	0.00			Smooth musc	Testis	Pool
4612	298678	W02256	3.92	31.84	8.12	2.00	0.00			CNS	Thyroid	Cervix
4626	592243	AA155695	7.89	47.80	6.06	1.00	0.00	11	221.51	Pancreas	Uterus	Parathyroid
4638	123561	R00822	39.06	367.80	9.42	2.00	3.00	14	249.31			
4642	382787	AA069596	6.72	151.19	22.51	1.00	0.00	3	461.79	Brain	Testis	LID not found
4674	770014	AA427667	5.32	28.30	5.32	1.00	0.00			Lymph	Placenta	Ovary
4694	130541	R22412	63.99	366.28	5.72	0.00	1.00	17	405.59	Umbilical cord	Aorta	Placenta
4700	810761	AA480851	7.32	183.05	22.26	5.00	0.00	13	268.41	Esophagus	Ovary	CNS
4708	773301	AA425556	9.09	116.85	12.85	3.00	0.00	16	411.33	Foreskin	Pancreas	Heart
4715	687397	AA235332	54.17	399.84	7.38	0.00	1.00	1	266.38	Small intestine	Eye	Foreskin
4716	638568	AA458931	185.57	1028.72	5.54	2.00	0.00			Muscle	Heart	Ear
4722	842836	AA486275	25.47	144.29	5.66	1.00	0.00	6	16.54	Larynx	Thyroid	Pancreas
4729	298198	N74383	15.94	91.14	5.72	1.00	0.00	1	740.99	Adipose	Foreskin	Pool
4734	380851	AA056148	17.78	141.22	7.95	3.00	0.00	11	225.28	Head and nec	Thyroid	Blood
4742	796268	AA460827	5.71	32.71	5.73	2.00	0.00	12	240.98	Bone	Muscle	Pooled
4747	814378	AA459039	46.27	1271.99	27.49	7.00	1.00	19	223.76	Pancreas	Nose	Parathyroid
4750	814595	AA480906	31.24	178.65	5.72	2.00	0.00	20	293.34	Smooth musc	Adrenal gland	Colon
4751	724378	AA250771	203.37	1453.55	7.15	4.00	2.00	22	154.71	Ovary	LID not found	Other
4752	207358	H58873	20.78	150.27	7.23	5.00	3.00	1	127.63	Skin		Placenta
4753	771196	AA443506	105.79	582.39	5.51	1.00	0.00	11	165.06			
4754	592540	AA160507	7.94	93.24	11.74	4.00	1.00	12	227.72	Larynx	Head and nec	Skin
4755	795771	AA460330	26.48	146.10	5.13	1.00	0.00	2	388.44	Smooth musc	Testis	-
4762	810131	AA464250	40.21	384.90	9.67	3.00	0.00			Pancreas	Omentum	Nose
4771	788566	AA452966	32.42	256.88	7.92	1.00	0.00	21	215.71	Thyroid	Parathyroid	Pooled
4772	785975	AA448599	8.61	49.78	5.78	2.00	0.00	6	42.01	Ear	Pool	Adipose
4774	897956	AA598817	12.66	207.32	16.37	5.00	3.00	22	45.84	Germ Cell	Blood	Adrenal gland
4776	199180	R95740	8.81	65.64	7.45	3.00	0.00			Pancreas	Liver	Germ Cell
4786	754436	AA410207	13.11	356.01	27.15	6.00	0.00			Brain	Bone	Cervix
4795	39808	R54050	23.99	285.25	11.89	1.00	0.00	5	337.8	Gall bladder	Eye	Stomach
4796	897655	AA496804	12.35	67.64	5.49	1.00	0.00	2	585.19	Ear	Umbilical cord	Placenta
4798	781362	AA448400	11.91	104.95	8.81	3.00	0.00			Skin	Pancreas	Breast
4803	214165	H77772	42.80	370.44	8.65	4.00	2.00	2	545.17	Pool	LID not found	Other
4806	138592	R63342	60.99	389.12	6.38	3.00	0.00	10	189.11	Placenta	Lung	-
4807	293380	N92048	5.87	83.96	10.90	0.00	1.00			Pool	LID not found	Other
4808	140057	R65963	2.68	18.25	6.80	2.00	0.00	9	359.62	Placenta	LID not found	Other
4813	298600	N74882	2.54	223.42	87.98	4.00	0.00	7	510.43	Foreskin	Lung	Uterus
4816	139331	R63782	19.71	205.96	10.45	4.00	4.00	2	304.52	Ear	Tonsil	Blood
4820	136288	R33780	38.27	284.91	7.44	4.00	0.00	2	625.84	Placenta	LID not found	Other
4821	122982	R00332	6.77	47.00	6.94	2.00	0.00	14	67.03	Kidney	Germ Cell	Pool

Table 2A

4824	141298	R64408	45.31	1092.18	24.11	4.00	5.00	1	642.27	Placenta	Foreskin	Testis
4835	295492	W23522	258.83	1641.13	6.34	1.00	0.00	19	218.53	CNS	Uterus	Eye
4839	127354	R08359	12.19	102.76	8.43	2.00	2.00					
4840	141366	R64449	16.79	217.56	12.96	5.00	3.00	6	115.59	Placenta	Testis	LID not found
4854	121521	T97794	63.38	451.13	7.12	3.00	0.00			Parathyroid	Foreskin	Eye
4856	139656	R63980	2.85	20.17	7.08	4.00	0.00	6	381.95	Placenta	LID not found	Other
4858	241066	H91404	57.15	295.74	5.17	0.00	1.00	6	44.4	Foreskin	Spleen	Blood
4859	295594	W02403	193.89	1448.47	7.47	2.00	0.00			Pool	LID not found	Other
4867	121543	T97809	4.93	36.42	7.39	1.00	1.00	5	626.75	Adrenal gland	Ovary	Prostate
4874	357091	W93510	29.68	162.71	5.48	1.00	0.00			Neural	Thyroid	Muscle
4881	136303	R34013	58.90	298.31	5.06	2.00	0.00			Placenta	Germ Cell	Ovary
4882	66474	R16009	9.06	87.27	9.63	5.00	0.00	7	500.33	Lymph	Pool	LID not found
4884	136632	R34957	23.51	119.77	5.09	1.00	0.00			Placenta	LID not found	Other
4886	38465	R49470	40.64	316.04	7.78	4.00	0.00					
4891	121954	T97870	36.96	276.50	7.48	5.00	1.00			Pool	LID not found	Other
4892	247082	N57648	102.34	727.83	7.11	3.00	0.00	20	237.59			
4901	294018	N64033	4.32	21.75	5.03	1.00	0.00			Pool	Heart	Brain
4904	67002	T69709	2.74	15.22	5.55	2.00	0.00			Neural	Pool	LID not found
4905	293932	N95842	24.01	275.72	11.49	4.00	5.00			Pool	LID not found	Other
4908	284701	N64840	2.67	15.13	5.68	1.00	0.00	10	188.13	CNS	Prostate	Colon
4909	207421	H56866	26.50	162.32	6.12	1.00	0.00	3	597.76	Pool	LID not found	Other
4911	196640	R93009	47.50	298.08	6.28	3.00	2.00			Pool	LID not found	Other
4915	134712	R28280	5.75	31.21	5.43	1.00	1.00	13	87.45	Bone marrow	Blood	Uterus
4917	248481	N78198	3.63	28.12	7.74	3.00	0.00	8	327.75	Pool	LID not found	Other
4918	275950	R93394	9.51	48.64	5.11	1.00	0.00	20	200.06	Pool	LID not found	Other
4919	202921	H54384	2.99	18.19	6.09	2.00	0.00	14	112.05	Pool	LID not found	Other
4921	200873	R98774	49.91	705.25	14.13	2.00	3.00	14	98.28	Pool	LID not found	Other
4922	296805	N70298	4.42	62.30	14.08	4.00	0.00			Pool	LID not found	Other
4923	135247	R31521	37.97	211.71	5.57	0.00	1.00			Ovary	Bone	Tonsil
4924	416099	W85892	4.56	25.75	5.65	0.00	1.00			Gall bladder	Thyroid	Ear
4927	240480	H90746	70.90	676.54	9.54	4.00	0.00	2	627.18	Pool	LID not found	Other
4929	233852	H65942	3.20	50.39	15.74	3.00	0.00	7	208.5	Pool	LID not found	Other
4930	296901	W04272	6.76	53.76	7.95	2.00	0.00	2	555.55	Pool	LID not found	Other
4931	139680	R63996	51.21	285.30	5.57	2.00	1.00	1	593.19	Placenta	Colon	LID not found
4933	204251	H59188	3.12	16.19	5.20	2.00	0.00	11	373.42	Testis	Adrenal gland	Germ Cell
4935	234664	H77737	1.99	10.08	5.07	1.00	0.00	5	473.67	Pool	LID not found	Other
4937	200838	R98947	3.35	37.75	11.26	4.00	0.00			Pool	LID not found	Other
4938	295483	W05026	124.53	3956.30	31.77	12.00	2.00			Lung	Pool	LID not found
4939	127400	R08563	2.94	29.70	10.11	2.00	0.00			Brain	Pool	LID not found
4943	295604	N66845	17.20	142.30	8.27	4.00	0.00	12	319.85			
4945	200840	R98948	2.46	16.72	6.80	1.00	0.00			Pool	LID not found	Other
4947	141684	R69645	2.25	15.27	6.78	2.00	0.00			Skin	Placenta	Pancreas
4948	249687	H85454	0.65	6.99	10.76	0.00	1.00			Brain	Foreskin	LID not found
4951	295873	N73510	7.57	63.84	8.43	3.00	2.00			Pool	LID not found	Other
4954	294445	W01511	19.57	135.95	6.95	1.00	1.00	1	629.23	Pool	LID not found	Other
4961	200937	R99004	22.51	434.35	19.30	6.00	5.00			Testis	Pool	LID not found
4964	416567	W86431	4.90	50.26	10.25	1.00	0.00	14	251	Adrenal gland	Germ Cell	Gall bladder
4966	486279	AA044205	7.99	318.80	39.67	12.00	1.00	3	627.2	Uterus	CNS	Testis
4967	233927	H65984	128.22	937.80	7.31	2.00	0.00	11	66.74	Pool	LID not found	Other
4969	247482	N54161	13.46	99.16	7.37	2.00	4.00	10	92.14	Pool	LID not found	Other
4975	240961	H90899	34.10	259.48	7.61	3.00	0.00	6	39.19	Small intestine		Head and neck
4976	795877	AA460152	79.78	500.54	6.27	0.00	1.00	5	281.27	Cervix	Ear	Umbilical cord
4977	201393	R99627	41.46	515.90	12.44	5.00	5.00	6	458.69	Stomach	Lymph	Prostate
4978	294942	N71473	169.43	938.64	5.54	2.00	0.00			Colon	Heart	Pool
4980	341634	W60647	196.87	1153.92	5.86	0.00	1.00	10	538.27	Heart	Brain	Pool

Table 2A

4981	207293	H58670	4.45	34.40	7.74	1.00	0.00	15	50.93	Pool	LID not found	Other
4984	284479	N52350	2.32	11.77	5.07	1.00	0.00	3	160.11	CNS	Brain	LID not found
4985	203551	H56033	69.70	538.39	7.72	4.00	0.00	2	194			
4988	360029	AA063574	2.32	21.23	9.15	0.00	2.00			Heart	LID not found	Other
4994	813256	AA455911	3.27	79.35	24.25	5.00	0.00	7	475.57	Kidney	Pancreas	Testis
4996	251019	H97778	25.48	586.14	23.00	8.00	1.00	16	406.29	Small intestine	Skin	Esophagus
5002	44255	H06113	41.35	268.53	6.45	2.00	0.00	3	463.34		Synovial mem	Germ Cell
5007	741087	AA478436	145.78	2893.05	19.85	4.00	1.00	17	404.41	Synovial mem	Blood	Adrenal gland
5011	345586	W76376	3.33	75.85	22.75	2.00	0.00	1	27	Eye	Ovary	Spleen
5015	160838	H24668	7.91	95.86	12.12	4.00	0.00	12	246.83			
5016	811162	AA486471	30.70	195.58	6.37	2.00	0.00	1	671.23	Breast	Adipose	Stomach
5020	341246	W58656	20.53	107.67	5.25	1.00	0.00	19	35.88	Eye	Breast	Muscle
5023	293325	N64882	4.91	73.61	14.99	7.00	0.00	5	153.69	Eye	Lymph	Spleen
5024	752631	AA417654	3.48	63.27	18.20	2.00	0.00	4	24.07	Larynx	Stomach	Pool
5031	296529	W01011	23.25	234.52	10.09	1.00	0.00	16	193.03	Ear	CNS	Germ Cell
5032	809464	AA456160	4.21	90.82	21.59	4.00	0.00	10	529.52	Cervix	Ear	Skin
5048	121722	T98152	13.81	330.56	23.94	0.00	2.00	5	504.31	Placenta	Heart	Whole embryo
5051	769921	AA430504	7.99	155.62	19.47	6.00	0.00	20	254.9	Larynx	Head and nec	Colon
5070	823590	AA497051	7.16	116.02	16.20	9.00	1.00					
5080	813757	AA453816	5.57	90.47	16.24	8.00	0.00			Smooth musc	Placenta	Skin
5084	210317	H65526	8.09	44.17	5.46	0.00	1.00			Spleen	Whole embryo	Pool
5089	897822	AA598572	2.62	301.01	114.81	9.00	1.00	9	301.16	Marrow	Ovary	Lymph
5090	786872	AA451891	3.12	31.08	9.95	2.00	0.00			Parathyroid	Germ Cell	Whole embryo
5093	67654	T49539	33.32	238.64	7.10	1.00	0.00	22	133.9	Epididymis	Ignore	Thyroid
5094	814546	AA480859	3.62	20.52	5.66	2.00	0.00			Peripheral ner	Blood	Tonsil
5097	359781	AA011320	6.93	38.09	5.50	1.00	0.00	14	151.92	Pooled	Spleen	Heart
5108	233365	H79888	131.96	952.94	7.22	1.00	0.00	9	417.73			
5111	80500	T64625	273.12	3216.30	11.78	5.00	0.00	13	141.14	Parathyroid	Foreskin	Heart
5118	789091	AA453105	34.44	260.94	7.58	3.00	0.00	6	104.03	Lymph node	Synovial mem	Cervix
5124	201986	R99423	18.58	97.87	5.27	1.00	0.00	2	567.39	Omentum	CNS	Parathyroid
5125	503097	AA151486	58.37	309.18	5.30	1.00	0.00	X	85.4	Uterus	Parathyroid	Cervix
5130	843133	AA486524	151.56	1317.86	8.70	2.00	0.00	5	350.47	Cervix	Muscle	Bone
5131	812266	AA455062	21.38	220.91	10.34	2.00	0.00			Placenta	Tonsil	Ovary
5136	246789	N53177	6.09	51.98	8.54	4.00	0.00	7	494.74	Placenta	Muscle	Pool
5139	624393	AA489714	6.29	35.89	5.71	1.00	0.00	9	392.05	Tonsil	Breast	Parathyroid
5147	824922	AA489017	1.07	14.57	13.67	1.00	0.00	19	213.91	Smooth musc	Blood	Adipose
5164	248649	N59542	9.19	55.80	6.07	1.00	1.00	2	304.52	Ear	Tonsil	Blood
5176	244684	N54296	25.33	136.01	5.37	0.00	1.00	2	222.73	Gall bladder	Tonsil	Foreskin
5184	265494	N21309	12.17	95.74	7.87	0.00	1.00	3	340.31	Eye	Foreskin	Pool
5187	128301	R11529	3.41	17.25	5.06	0.00	1.00	20	264.27	Pool	LID not found	Other
5188	188390	H43657	5.17	33.01	6.38	1.00	0.00	10	441.32	Breast	LID not found	Other
5190	111844	T64869	2.16	12.07	5.58	1.00	0.00			Pool	LID not found	Other
5191	131316	R23055	7.59	47.43	6.25	0.00	2.00			Tonsil	Spleen	Whole embryo
5193	138861	R62760	23.90	197.08	8.24	1.00	0.00	3	395.51	Placenta	Pooled	Heart
5196	182365	H27590	17.53	128.29	7.20	3.00	0.00	8	540.74	Breast	LID not found	Other
5198	296472	W00973	4.01	21.84	5.45	2.00	0.00			Pool	LID not found	Other
5200	199327	R95916	101.49	666.32	6.57	2.00	0.00	7	607.47	Pool	LID not found	Other
5202	109108	T80718	2.79	20.56	7.37	1.00	0.00			Pool	LID not found	Other
5205	196005	R91904	6.21	41.77	6.73	1.00	0.00	9	123.91	Esophagus	Larynx	Blood
5207	131388	R23097	3.30	19.58	5.93	2.00	0.00			Placenta	Pancreas	LID not found
5208	210622	H84244	9.85	198.27	20.12	6.00	5.00	2	216.99	Pool	LID not found	Other
5213	134848	R31831	7.01	54.85	7.82	5.00	0.00	4	450.11	Uterus	Placenta	Parathyroid
5214	111765	T84965	51.96	288.27	5.55	1.00	0.00			Kidney	Pool	LID not found
5216	196522	R91557	13.24	73.07	5.52	1.00	0.00			Pool	LID not found	Other
5220	209167	H63668	28.20	667.08	23.66	5.00	3.00			Breast	Colon	Heart

Table 2A

5222	246143	N52408	187.72	1040.36	5.54	2.00	0.00	19	250.6	Placenta	Aorta	Uterus
5227	345670	W76603	10.58	413.19	39.13	1.00	0.00	18	66.29	Adipose	Pooled	Heart
5228	202740	H53893	33.68	486.27	14.45	6.00	3.00	12	484.53	Kidney	Breast	Colon
5230	121661	T97616	10.69	73.24	6.85	3.00	3.00			Pool	LID not found	Other
5232	203772	H56088	53.03	455.36	8.59	4.00	0.00			Pool	LID not found	Other
5233	210873	H66312	6.92	2019.02	291.89	1.00	3.00	17	322.57	Pool	LID not found	Other
5244	201562	R97050	4.34	29.98	6.90	1.00	0.00					
5248	294968	N99519	3.75	18.88	5.03	0.00	2.00	13	131.78	Pool	LID not found	Other
5252	191508	H37846	28.55	308.99	10.82	4.00	0.00					
5255	132159	R26094	9.71	68.16	7.02	5.00	1.00			Pooled	Placenta	Brain
5262	244154	N75669	70.95	581.16	8.19	1.00	0.00	12	457.31	Pancreas	CNS	Testis
5264	195314	R92032	2.34	12.02	5.15	1.00	0.00	13	85.4	Testis	Pool	LID not found
5265	136218	R33841	5.13	35.99	7.01	2.00	0.00			Placenta	Testis	LID not found
5266	239692	H80558	18.28	101.49	5.55	1.00	1.00	7	588.48	Aorta	CNS	Pool
5267	129567	R14894	30.46	283.75	9.32	5.00	0.00			Pool	LID not found	Other
5272	195820	R92285	46.14	752.28	16.30	6.00	5.00			Pool	LID not found	Other
5273	130371	R21785	19.07	133.41	6.99	0.00	1.00			Cervix	Testis	Placenta
5275	129922	R19183	85.35	775.83	9.09	4.00	2.00			Pool	LID not found	Other
5277	366389	AA025807	228.73	1357.48	5.93	3.00	0.00	5	626.75	Ear	Small intestine	Eye
5280	195821	R92292	54.59	680.52	12.47	5.00	5.00	11	124.08	Pool	LID not found	Other
5288	770838	AA427732	7.49	40.16	5.36	1.00	0.00	5	14.04	Cervix	Pooled	Pancreas
5294	235055	H73608	14.90	92.63	6.22	0.00	1.00	6	164.21	Spleen	Pool	LID not found
5296	811010	AA485365	34.61	212.20	6.15	1.00	0.00	10	342.2	Brain	Ovary	Lung
5298	133236	R26929	16.89	105.73	6.26	2.00	0.00	12	55.14	Ear	Gall bladder	Breast
5305	233446	H77714	26.02	571.38	21.96	4.00	5.00			Muscle	Heart	Pool
5308	376058	AA040269	4.09	23.40	5.72	1.00	0.00	8	540.74	Neural	Pancreas	Ovary
5309	213871	H72932	5.52	51.59	9.34	3.00	0.00			Tonsil	CNS	Muscle
5310	257011	N26802	12.75	215.41	16.89	5.00	4.00	7	640.87	Placenta	Heart	Pool
5317	280386	N49375	3.17	18.81	5.94	0.00	1.00	2	545.06	CNS	Brain	LID not found
5319	220077	H82532	10.68	56.21	5.26	1.00	0.00					
5327	785371	AA453273	31.49	185.46	5.89	1.00	0.00	7	140.47	Mouth	Ear	Bone
5328	341854	W58342	2.58	39.90	15.47	1.00	0.00	13	107	Aorta	Brain	Whole embryo
5329	233719	H79046	1.58	95.64	60.38	1.00	0.00	17	329.98	Brain	Pool	LID not found
5338	111070	T83394	28.74	184.18	6.41	1.00	2.00			Pool	LID not found	Other
5341	243648	N49998	47.92	249.31	5.20	1.00	0.00	7	413.5	Pool	LID not found	Other
5342	140635	R66945	8.53	50.96	5.97	1.00	0.00	9	53.56	Neural	Kidney	Heart
5344	428773	AA004664	3.90	75.90	19.45	4.00	0.00	X	86.88	Placenta	Ear	Heart
5345	294150	N99803	47.71	280.39	5.88	1.00	0.00	4	403.14	Pool	Whole embryo	LID not found
5349	243656	N49895	186.09	1077.98	5.79	2.00	2.00	10	460.31	Parathyroid	Uterus	Pool
5350	130835	R22252	11.90	61.49	5.17	0.00	1.00			Blood	Foreskin	Placenta
5353	296749	N74059	20.02	117.13	5.85	2.00	0.00			Pool	LID not found	Other
5354	115223	T86603	37.37	216.81	5.80	1.00	0.00	20	70.67	Pool	LID not found	Other
5360	502062	AA126825	4.29	25.03	5.83	0.00	1.00	9	323.12	Tonsil	Foreskin	CNS
5366	125685	R07594	31.68	278.82	8.80	4.00	0.00	13	155.38	Whole embryo	Spleen	Kidney
5367	811128	AA485683	3.12	42.07	13.50	0.00	2.00			Ovary	Blood	Heart
5371	247230	N57927	3.08	35.04	11.38	3.00	0.00			Colon	Pool	LID not found
5372	376652	AA045257	12.80	68.37	5.34	0.00	1.00	2	300.43	Foreskin	Colon	Heart
5373	195487	R92163	28.43	177.29	6.71	0.00	5.00	13	84.78	CNS	Pool	LID not found
5383	812975	AA484605	9.33	55.98	6.00	1.00	0.00	9	14.64	Umbilical cord	CNS	Whole embryo
5384	150702	H02340	1.26	36.62	29.13	5.00	0.00	17	338.92	Pooled	Placenta	Blood
5390	66982	T67549	5.86	36.04	6.15	4.00	0.00	2	318.41			
5392	897497	AA497085	3.43	32.94	9.61	1.00	0.00	7	115.72	Blood	Colon	Kidney
5395	813673	AA453831	117.19	672.25	5.74	1.00	0.00	1	582.84	Bone marrow	Neural	Synovial membrane
5396	46697	H09914	14.47	158.57	10.96	1.00	0.00	1	557.85	Smooth musc	CNS	Pancreas
5408	813841	AA453728	41.53	311.01	7.49	0.00	1.00					

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5408	212649	H70473	2.40	20.42	8.50	2.00	0.00			Liver	Pool	-
5416	810873	AA459197	31.54	381.99	12.11	4.00	0.00	12	37.52	Esophagus	Ovary	Colon
5428	293104	N91990	29.90	414.75	13.87	1.00	0.00	10	87.85	Neural	Gall bladder	Thyroid
5438	204897	H57180	5.40	32.79	6.07	0.00	1.00	16	462.18	Lymph	Kidney	Pool
5440	211780	H71868	127.85	739.00	5.78	1.00	0.00	5	366.4	Head and nec	Umbilical cord	Thyroid
5443	31842	R41839	6.87	52.68	7.67	3.00	0.00	17	345.1	Adipose	Skin	Umbilical cord
5446	51916	H22563	5.17	39.43	7.63	1.00	1.00	20	57.43	Thyroid	Foreskin	Blood
5454	742082	AA405769	2.11	29.83	14.11	3.00	1.00	20	333.71	Adipose	Liver	Kidney
5455	245198	N76581	5.58	57.99	10.21	2.00	0.00	17	309.46	Skin	Adipose	Stomach
5456	150623	H02158	15.68	137.58	8.78	5.00	0.00	11	237.93	Trachea	Parathyroid	Thyroid
5458	153008	R48999	2.83	16.41	6.23	1.00	0.00	21	248.73	Adrenal gland	Tonsil	Brain
5460	27787	R40400	12.29	87.57	7.12	1.00	0.00	3	-7.15	Adipose	CNS	Brain
5467	343443	W87323	51.37	290.95	5.66	0.00	1.00	8	118.53	Ignore	Germ Cell	Breast
5475	789382	AA453338	2.10	11.67	5.57	1.00	0.00	6	117.94	Pooled	Breast	Whole embryo
5479	49260	H16573	0.87	4.60	5.27	1.00	0.00	6	150.71	Brain	Eye	Testis
5480	788185	AA453410	9.66	67.53	6.99	0.00	1.00	8	100.33	Thyroid	Umbilical cord	Spleen
5485	51448	H21041	10.99	74.74	6.80	2.00	0.00	1	697.15	Smooth musc	CNS	Parathyroid
5489	51665	H23187	0.54	3.11	5.77	0.00	1.00	8	419.76	Bone	Kidney	CNS
5494	898082	AA598776	37.84	315.98	8.33	0.00	1.00	9	280.44	Larynx	Lymph	Colon
5500	843049	AA485883	6.11	59.83	9.79	1.00	0.00			Larynx	Cervix	Blood
5509	368511	AA026609	37.73	292.78	7.76	2.00	0.00	1	727.92	Omentum	Muscle	Umbilical cord vein
5510	700302	AA283693	4.06	111.12	27.35	1.00	0.00			Tonsil	Breast	Germ Cell
5516	795827	AA461506	5.22	57.32	10.98	1.00	0.00			Blood	Brain	Muscle
5524	704459	AA279883	3.39	50.52	14.88	1.00	0.00	12	59.86	-	Tonsil	CNS
5533	48799	H14841	105.24	614.30	5.84	2.00	0.00	17	46.69	Eye	Brain	CNS
5538	782513	AA448478	69.15	815.43	11.79	5.00	0.00	16	471.03	Ovary	Stomach	Ear
5543	232873	H75547	229.90	1373.76	5.98	3.00	0.00	19	250.6	Small intestine	Bone marrow	Stomach
5548	504228	AA132090	4.64	48.76	10.51	4.00	0.00	1	340.59	Thymus	Lymph	Blood
5552	208413	H62162	2.75	77.76	28.27	7.00	1.00			Kidney	Liver	Prostate
5555	469281	AA026112	1.80	10.03	5.58	1.00	0.00			Pancreas	Heart	Uterus
5560	814526	AA459588	4.49	58.09	12.93	7.00	0.00	20	353.84	Thymus	Ovary	Blood
5561	46182	H09614	28.72	182.95	6.37	0.00	1.00	18	347.86			
5562	784319	AA447098	56.78	302.27	5.32	1.00	0.00	18	270.03	Ear	Foreskin	Breast
5563	627939	AA195959	58.12	325.27	5.60	0.00	2.00	11	73.6	Muscle	Heart	-
5564	308013	N91385	3.75	27.58	7.36	1.00	0.00	11	221.18	Blood	Parathyroid	Lymph
5567	825583	AA504617	7.99	40.21	5.03	1.00	0.00	20	195.03	Head and nec	Thymus	Stomach
5568	785293	AA476543	22.62	120.51	5.28	0.00	1.00	11	239.59	Pooled	Colon	Pancreas
5570	248703	N59716	20.00	114.95	5.75	1.00	0.00	X	87.34	Thyroid	Aorta	Whole embryo
5578	121981	T97889	6.70	49.29	7.35	0.00	1.00	1	142.59			
5583	124091	R02718	2.45	13.82	5.65	1.00	0.00	10	421.71	Pool	LID not found	Other
5590	201264	R99311	5.55	61.58	11.10	6.00	0.00	1	740.99	Liver	Pool	LID not found
5598	136775	R35253	11.61	60.78	5.23	1.00	0.00	2	601.45	Placenta	Whole embryo	Prostate
5599	124079	R02820	13.57	72.53	5.35	0.00	1.00	4	184.61	Thyroid	Eye	CNS
5605	108422	T77847	15.84	181.17	11.44	3.00	0.00	2	19.44	CNS	Tonsil	Ovary
5610	294040	N66497	29.72	233.66	7.86	1.00	3.00	6	384.33	Pancreas	Parathyroid	Foreskin
5615	128765	R10015	8.08	66.55	8.23	2.00	0.00	11	260.03	Ear	Muscle	Tonsil
5617	245426	N77205	81.49	492.14	6.04	1.00	0.00			Small intestine	Ear	Thymus
5619	121736	T98075	18.48	215.95	11.69	8.00	2.00	5	391.73	Pool	LID not found	Other
5629	22711	T74714	6.74	37.14	5.51	1.00	0.00	6	629.01	CNS	Brain	LID not found
5630	243817	N45244	38.59	245.26	6.35	4.00	0.00	6	361.74	Umbilical cord	Prostate	Whole embryo
5632	140334	R68994	7.95	53.74	6.76	3.00	3.00	10	510.08	Placenta	LID not found	Other
5633	122178	T98615	11.83	122.49	10.26	6.00	0.00			-	Placenta	Kidney
5644	136801	R36181	85.42	729.64	8.54	3.00	0.00	11	261.25	Placenta	Breast	Heart
5646	292749	N80491	14.30	72.90	5.10	1.00	0.00	1	371.25	Blood	Germ Cell	Pooled
5647	124822	R05837	2.25	17.82	7.93	2.00	0.00			Ovary	Brain	Pool

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5653	121776	T98098	3.24	17.67	5.45	1.00	0.00	3	46.9	Blood	Placenta	Prostate
5657	127636	R09301	11.75	77.84	6.62	1.00	1.00			Pool	LID not found	Other
5660	138496	R68634	8.36	62.36	7.46	1.00	1.00	19	284.08			
5665	200545	H48445	7.60	42.69	5.62	1.00	0.00			Pool	LID not found	Other
5673	200604	H48467	17.21	131.41	7.64	3.00	0.00	15	243	Pool	LID not found	Other
5674	295044	N71585	10.93	98.74	9.04	5.00	3.00			Pool	LID not found	Other
5677	207881	H60317	49.61	685.43	13.82	4.00	2.00			Pool	LID not found	Other
5678	137139	R36006	7.83	50.67	6.47	2.00	1.00	6	384.54	Tonsil	Aorta	Whole embryo
5682	295106	W01645	3.52	44.23	12.55	8.00	0.00	11	236.72	Pool	LID not found	Other
5685	207868	H60491	15.17	132.58	8.74	6.00	0.00	2	544.88	Pool	LID not found	Other
5687	138444	R68272	3.68	61.83	16.80	1.00	0.00	10	345.66	Eye	CNS	Placenta
5690	295590	W02401	44.35	282.25	6.36	2.00	1.00	20	336.98	Pool	LID not found	Other
5693	207952	H60523	19.24	145.45	7.56	2.00	0.00			Pool	LID not found	Other
5696	271952	N35301	5.53	91.00	16.46	5.00	2.00			Pancreas	Gall bladder	Foreskin
5697	201229	R99386	10.11	180.28	17.83	5.00	5.00	15	220.59	Pool	LID not found	Other
5698	296094	W02591	101.25	656.99	6.49	2.00	0.00			Pool	LID not found	Other
5703	159725	H23963	5.01	56.47	11.26	1.00	1.00	2	506.5	Breast	LID not found	Other
5709	208984	H60688	74.43	471.73	6.34	1.00	0.00			Adrenal gland	Pool	LID not found
5713	201314	R99682	32.16	202.66	6.30	2.00	1.00			Pool	LID not found	Other
5715	144880	R78580	1.92	12.53	6.52	2.00	0.00	19	35.68	Pooled	Placenta	Pool
5719	131239	R24258	3.51	25.05	7.13	2.00	0.00	1	15.07			
5720	810403	AA464202	15.02	82.07	5.46	0.00	1.00	11	227.6	Parathyroid	Ovary	Breast
5721	201317	R99690	13.71	206.53	15.06	6.00	5.00			Pool	LID not found	Other
5722	298559	W00793	73.17	507.83	6.94	1.00	0.00			Pool	LID not found	Other
5724	281476	N51521	10.49	385.12	36.70	1.00	0.00	4	673.59			
5725	210548	H65052	29.39	174.79	5.95	6.00	4.00	11	167.19	Liver	Spleen	Blood
5726	109314	T60848	3.36	19.20	5.71	1.00	0.00	19	32.22	Synovial mem	Adrenal gland	Placenta
5728	360075	AA013240	2.11	12.37	5.88	1.00	0.00	5	402.9	Germ Cell	Eye	Brain
5731	135688	R32406	5.93	32.43	5.47	1.00	0.00	3	453.05	Placenta	Germ Cell	Uterus
5733	213116	H69576	126.72	862.04	6.70	1.00	1.00			Pool	LID not found	Other
5737	201764	R99938	11.19	64.31	5.75	1.00	0.00			Pool	LID not found	Other
5738	296802	W01026	66.30	436.73	6.59	2.00	1.00			Pool	LID not found	Other
5739	240430	H78097	14.99	99.87	6.66	1.00	0.00	7	64.01	Placenta	Aorta	Pool
5741	208940	H61684	6.56	44.63	6.80	4.00	0.00			Pool	LID not found	Other
5747	295916	W04152	51.22	527.16	10.29	6.00	2.00			Placenta	Tonsil	Pool
5748	795893	AA460168	0.76	12.86	16.97	1.00	1.00	19	267.41	Smooth musc	Pancreas	Skin
5749	211351	H75690	2.98	20.28	6.81	1.00	0.00	2	88.06	Pool	LID not found	Other
5750	122787	T99674	6.06	37.21	6.14	1.00	0.00			Pool	LID not found	Other
5753	201818	H48318	2.64	18.03	6.82	1.00	4.00			Pool	LID not found	Other
5755	284592	N76193	20.72	132.39	6.39	0.00	1.00	11	204.26	Placenta	Pool	Cervix
5757	208434	H62166	20.58	162.07	7.87	2.00	2.00			Pool	LID not found	Other
5759	233645	H79007	76.19	550.08	7.22	2.00	2.00			Ear	Uterus	Parathyroid
5783	28012	R40794	25.40	139.90	5.51	1.00	0.00	X	238.33	Small intestine	Gall bladder	Parathyroid
5787	23932	R39464	4.33	63.77	14.73	1.00	0.00	12	457.31	Pancreas	CNS	Testis
5788	810813	AA458884	10.58	303.83	28.72	8.00	4.00			Larynx	Nose	Head and neck
5790	303048	N91584	2048.09	12924.63	6.32	1.00	0.00	9	70.89	Prostate	Lung	LID not found
5791	46356	H09936	10.99	89.80	8.17	1.00	0.00			Lung	Brain	LID not found
5794	122274	T98783	34.32	203.01	5.91	1.00	1.00	2	108.91			
5796	177737	H46663	6.79	39.24	5.78	1.00	0.00			Blood	Prostate	Muscle
5804	742101	AA405891	14.67	288.69	19.68	10.00	3.00	2	412.17	Thyroid	Skin	Ovary
5812	810724	AA480815	1.15	13.72	11.95	1.00	1.00	6	116.56	Marrow	Smooth musc	Larynx
5820	511066	AA100296	1.89	15.26	8.08	3.00	0.00			Ear	Umbilical cord	Tonsil
5824	46509	H15634	13.41	105.49	7.87	3.00	0.00	19	71.09	Whole embryo	Pool	Kidney
5826	51447	H20872	7.47	119.62	16.02	6.00	0.00	1	576.3	Peripheral ner	CNS	Blood
5827	767069	AA424516	9.20	240.93	26.18	16.00	0.00	11	400.33	Ear	Brain	Colon

Table 2A

5831	769028	AA426311	5.01	151.45	30.25	0.00	1.00	17	320.28	Whole embryo	Aorta	Pool	
5839	809598	AA458472	36.49	297.75	8.16	6.00	0.00	6	118.71	Thymus	Skin	Adipose	
5847	23173	T75436	7.67	39.39	5.14	1.00	0.00	4	457.01	Adrenal gland	Eye	Brain	
5856	137017	R35665	0.77	10.38	13.44	0.00	1.00	7	252.33	Placenta	Eye	Cervix	
5857	897906	AA598852	8.76	73.88	8.43	6.00	0.00	3	701.95	Kidney	Tonsil	Thyroid	
5859	667883	AA258396	38.68	259.23	6.70	0.00	1.00	12	311.24		Aorta	Foreskin	
5861	842784	AA486305	673.78	5862.61	8.70	2.00	0.00	12	384.44		Umbilical cord	Esophagus	
5866	380057	AA048411	60.04	303.58	5.06	1.00	0.00	17	382.93	Smooth musc	Gall bladder	Eye	
5877	430318	AA010609	46.12	232.69	5.04	1.00	0.00	22	119.23	Parathyroid	Kidney	Breast	
5878	815239	AA461277	3.85	28.18	7.31	1.00	0.00	19	239.99	Skin	Thyroid	Lymph	
5883	828135	AA521346	8.15	41.31	5.07	1.00	0.00	6	132.5	Stomach	Nose	Cervix	
5884	209518	H65260	1.69	8.88	5.25	1.00	0.00			Pool	LID not found	Other	
5891	810942	AA459380	42.16	222.37	5.27	1.00	0.00	X	351.05	Blood	Pancreas	Bone	
5892	127408	R08755	31.42	167.01	5.32	3.00	1.00						
5901	827144	AA521243	8.79	135.51	15.41	3.00	0.00	2	223.55	Neural	Tonsil	Germ Cell	
5903	725503	AA292995	24.26	144.22	5.95	2.00	0.00	22	51.16	Larynx	Pooled	Foreskin	
5906	49117	H14804	7.54	40.03	5.31	1.00	0.00	X	138.23	CNS	Foreskin	Lymph	
5911	196444	R92495	6.04	35.89	5.94	0.00	1.00	17	345.1	Placenta	Pool	Heart	
5913	840691	AA486367	54.57	459.40	8.42	1.00	0.00	2	601.35	Nose	Gall bladder	Umbilical cord	
5921	950607	AA608548	216.08	1241.33	5.74	2.00	0.00						
5923	815294	AA461547	9.15	58.89	6.43	1.00	0.00	11	257.7	Lymph node	Tonsil	Blood	
5927	195753	R89083	132.07	999.77	7.57	2.00	0.00	1	292.92	Cervix	LID not found	Other	
5934	205445	H57830	18.29	123.46	6.75	0.00	1.00	22	114.61	Small intestine	Pooled	Thyroid	
5942	811600	AA458533	3.45	71.40	20.67	5.00	0.00			CNS	Lung	Ovary	
5954	109271	T81281	69.82	507.82	7.27	3.00	1.00			Breast	Pool	LID not found	
5962	132630	R25980	6.16	33.31	5.41	1.00	0.00			Pooled	Placenta	Pool	
5964	191516	H36148	7.53	94.44	12.55	6.00	0.00			Brain	Pool	LID not found	
5965	194351	H60871	75.77	481.07	6.35	2.00	0.00			Testis	Uterus	Pool	
5968	195853	R92310	13.98	253.22	18.12	6.00	5.00	2	545.1	Foreskin	Heart	Whole embryo	
5970	122859	T99881	30.71	201.82	6.57	1.00	2.00			Pool	LID not found	Other	
5972	242700	H94163	16.35	157.40	9.62	3.00	0.00						
5975	131446	R23952	3.77	25.27	6.70	2.00	0.00	10	338.83	Placenta	LID not found	Other	
5976	244781	N54407	13.56	256.46	19.06	4.00	5.00	10	508.28	Pool	LID not found	Other	
5983	134235	R31154	66.98	542.83	8.10	5.00	0.00	15	243.99	Placenta	Pooled	Tonsil	
5984	196125	R92347	24.08	233.28	9.69	6.00	0.00			Eye	Parathyroid	Heart	
6000	196303	R92435	2.85	16.92	5.94	1.00	0.00	1	592.98	Ovary	Colon	Tonsil	
6007	143322	R74357	4.83	86.93	17.99	9.00	0.00			Placenta	CNS	Pancreas	
6008	196350	R92545	119.56	1124.56	9.40	3.00	0.00			Pool	LID not found	Other	
6014	202209	H52534	12.93	79.88	6.18	2.00	0.00	10	536.56	Liver	Eye	Pool	
6016	196345	R92455	121.53	1332.25	10.96	3.00	0.00	4	470.33	Muscle	Thyroid	Stomach	
6018	243770	N39325	90.01	787.20	8.75	1.00	0.00			Pool	LID not found	Other	
6021	66815	T64956	18.90	121.26	6.42	2.00	0.00	3	430.63				
6023	136317	R34121	36.44	325.85	8.94	5.00	0.00	1	27				
6027	129342	R16431	16.11	138.54	8.60	4.00	0.00	X	85.38	Pool	LID not found	Other	
6028	194401	R83017	104.75	1073.86	10.25	4.00	0.00	8	247				
6031	196185	R91948	5.99	29.94	5.00	0.00	1.00	21	144.63	Gall bladder	Eye	Parathyroid	
6032	243784	N33927	22.22	210.26	9.46	5.00	5.00	6	104.03	Lymph node	Prostate	Uterus	
6034	120097	T95151	4.17	53.46	12.82	5.00	0.00			Pool	Tonsil	Colon	
6035	293683	N94181	55.73	758.70	13.61	4.00	0.00						
6036	208570	H63223	3.12	32.78	10.50	2.00	0.00	6	463.92	Pool	LID not found	Other	
6037	66697	T64881	5.14	25.73	5.01	1.00	0.00			Spleen	Whole embryo	Parathyroid	
6038	242070	H94236	5.01	41.59	8.30	1.00	3.00	4	678.51	Pool	LID not found	Other	
6039	233318	H78863	3.73	34.93	9.37	1.00	0.00	8	477.99	Pool	Brain	Eye	
6040	290054	N64671	7.33	37.08	5.06	1.00	0.00			CNS	Aorta	Whole embryo	
6042	230247	H94934	11.15	82.07	7.36	0.00	3.00						

Table 2A

6043	203514	H55968	3.76	23.26	6.19	2.00	0.00	11	268.06	Gall bladder	Foreskin	Whole embryo
6044	295741	W02483	2.20	15.80	7.19	1.00	0.00	17	406.09	Parathyroid	Ovary	Brain
6047	131824	R25114	2.48	12.87	5.18	0.00	1.00	11	425.84	Placenta	Heart	Lung
6048	280122	N49231	59.47	1326.43	22.30	6.00	5.00			CNS	Breast	Kidney
6052	282404	N49774	9.11	58.31	6.40	2.00	0.00	12	134.37			
6055	782203	AA431972	15.54	92.37	5.95	0.00	1.00	16	162.07			
6057	240138	H79613	2.64	15.53	5.89	3.00	0.00			Aorta	Stomach	Pooled
6058	121611	T97590	78.79	494.97	6.28	1.00	0.00			Foreskin	Esophagus	Cervix
6063	307314	N95217	202.10	1072.03	5.30	2.00	0.00			Ignore	Pool	LID not found
6064	241847	H93393	8.06	92.05	11.42	3.00	0.00	21	215.71	Smooth musc	Pooled	Prostate
6067	416856	W86660	2.87	15.83	5.51	0.00	1.00	15	243.11			
6069	284341	N52254	3.17	45.78	14.43	0.00	1.00	7	94.41	Foreskin	LID not found	Other
6071	203474	H55784	140.53	977.85	6.96	1.00	1.00	2	354.55	Thymus	Breast	Whole embryo
6075	268000	N23753	18.46	106.59	5.77	2.00	0.00			Ovary	LID not found	Other
6079	181988	H25846	60.64	644.48	10.63	5.00	0.00	2	558.69	Pool	LID not found	Other
6083	810203	AA464517	4.46	48.88	10.97	4.00	0.00	X	275.71	Ovary	Uterus	Tonsil
6085	244722	N52535	35.31	321.13	9.10	4.00	0.00			Pool	LID not found	Other
6086	470646	AA031770	77.49	420.72	5.43	0.00	1.00			Prostate	Germ Cell	Testis
6089	241097	H80336	16.11	118.61	7.36	2.00	3.00			Foreskin	Pool	LID not found
6092	782537	AA448484	4.58	44.76	9.76	3.00	0.00	6	64.16	Germ Cell	Uterus	Cervix
6095	417305	W90001	11.16	64.46	5.77	4.00	0.00			Pancreas	Pool	LID not found
6097	295992	N73555	6.18	37.53	6.07	1.00	0.00			Prostate	Pool	LID not found
6099	416611	W88466	5.53	91.61	16.57	3.00	0.00			Lung	Ovary	LID not found
6101	245062	N72384	6.58	33.87	5.15	0.00	1.00	1	28.08			
6103	771023	AA427978	4.65	39.05	8.39	7.00	4.00	19	271.02	Pool	LID not found	Other
6110	233299	H77506	98.69	843.44	8.55	2.00	0.00			Adipose	Bone	Ear
6113	241507	H80724	74.60	423.77	5.68	2.00	0.00			Larynx	Kidney	Breast
6115	488202	AA046424	4.16	30.64	7.36	1.00	0.00	9	377.24	Thyroid	Stomach	Ovary
6116	770868	AA434390	12.25	218.85	17.86	1.00	1.00			Pool	LID not found	Other
6119	810609	AA464739	120.65	838.42	6.93	1.00	1.00			Placenta	Ovary	Germ Cell
6122	129616	R16656	10.16	67.75	6.67	3.00	0.00			Pool	LID not found	Other
6124	771058	AA427521	4.82	29.32	6.09	1.00	0.00			Cervix	Pool	LID not found
6125	246478	N73227	27.56	247.29	8.97	3.00	0.00	15	243.19	Pool	LID not found	Other
6127	195370	R89581	6.39	43.67	6.84	6.00	0.00	9	252.77	Liver	Ear	Skin
6129	230509	H81048	151.03	1118.42	7.41	2.00	1.00			Pooled	Thyroid	Tonsil
6130	233071	H75632	5.96	37.27	6.26	1.00	0.00			Pool	LID not found	Other
6131	212438	H69528	58.01	551.59	9.51	5.00	0.00	14	260.52	Foreskin	Pool	Brain
6133	246766	N53167	1.67	14.96	8.02	1.00	0.00	12	53.22	Pool	LID not found	Other
6136	418299	W90749	3.02	36.73	12.17	1.00	0.00	14	260.52	Placenta	LID not found	Other
6137	244201	N52978	2.38	42.87	18.17	2.00	0.00	1	150.31			
6138	134312	R31218	3.40	33.60	9.87	1.00	0.00			Placenta	Testis	Lung
6140	66856	T67223	7.54	55.44	7.36	2.00	5.00			Foreskin	Eye	Placenta
6143	132217	R26396	5.46	43.00	7.87	0.00	2.00			Nose	Foreskin	LID not found
6144	140267	R67903	151.34	1362.44	9.00	2.00	3.00	9	357.99	Nose	Parathyroid	Pooled
6148	266161	N21592	11.29	90.12	7.98	7.00	0.00	12	415.54	Foreskin	Heart	LID not found
6156	322223	W38022	3.13	60.77	19.44	16.00	0.00			Foreskin	LID not found	Other
6160	376843	AA046112	8.40	50.79	6.05	0.00	1.00					
6168	272548	N35892	7.41	70.52	9.52	3.00	0.00	12	242.02	CNS	Heart	Brain
6171	133192	R26456	2.56	15.47	6.03	1.00	0.00			Pool	LID not found	Other
6191	357265	W93682	3.75	57.93	15.45	2.00	0.00	11	99.65	Placenta	Pool	Kidney
6194	121649	T97650	2.89	14.62	5.05	1.00	0.00	19	34.68	Marrow	Breast	Ovary
6203	357396	W93847	2.98	45.29	15.22	1.00	1.00	11	277.15	Blood	Foreskin	Colon
6211	782233	AA431721	8.53	48.58	5.70	2.00	0.00	6	503.11	Placenta	Parathyroid	Prostate
6215	291712	N67839	24.87	153.48	6.17	2.00	0.00					
6219	428431	AA004415	1.46	14.61	10.00	2.00	0.00					

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6220	213850	H72368	20.72	218.92	10.56	0.00	1.00	11	131.77	Whole embryo	Ovary	Kidney
6238	112456	T90971	3.27	17.94	5.48	1.00	0.00					
6240	301043	N81017	2.99	24.88	8.31	5.00	0.00	10	400.44	Spleen	Tonsil	Foreskin
6244	229668	H68542	23.67	137.85	5.82	1.00	0.00	2	743.9			
6247	327058	AA284267	2.66	17.03	5.96	1.00	0.00			Heart	LID not found	Other
6248	297731	N69908	44.42	830.09	18.68	3.00	0.00			Lung	Testis	LID not found
6251	809703	AA454710	4.39	33.40	7.61	2.00	0.00	19	68.86	Bone marrow	Head and nec	Placenta
6254	429764	AA009677	2.47	22.30	9.01	4.00	0.00	10	549.96			
6259	154769	R55630	6.94	49.19	7.09	1.00	0.00	1	32.1			
6260	203114	H54419	104.49	1043.38	9.99	4.00	4.00			Testis	Pool	LID not found
6263	327239	AA284307	11.58	84.71	5.59	1.00	0.00	18	115.51	Heart	LID not found	Other
6265	366590	AA026666	27.63	139.08	5.03	1.00	0.00	9	417.73	Ear	Heart	Brain
6268	203554	H56029	213.57	2457.62	11.51	4.00	5.00	12	84.71			
6275	234131	H70608	252.22	1518.19	6.02	1.00	0.00					
6277	327179	W02753	4.39	40.09	9.14	1.00	0.00	1	165.69	Heart	Testis	LID not found
6285	327195	AA284249	15.86	91.15	5.75	1.00	0.00			Prostate	Heart	Kidney
6292	245542	N53564	25.65	140.20	5.47	1.00	1.00			Pool	LID not found	Other
6298	320495	W16059	3.54	31.61	8.93	1.00	0.00			Ear	Umbilical cord	Aorta
6300	209389	H64150	187.99	1297.51	6.90	2.00	3.00	2	714.07			
6303	321470	W32303	11.36	57.93	5.10	1.00	0.00	2	467.75			
6304	590148	AA156030	13.06	70.29	5.38	1.00	0.00	5	154.93	Head and nec	Stomach	Umbilical cord
6305	364563	AA022949	4.71	164.27	34.90	7.00	3.00	5	633.32	Lung	Heart	Ovary
6308	505000	AA151265	3.90	29.85	7.65	3.00	0.00			Germ Cell	Breast	Uterus
6316	429494	AA011347	11.40	61.38	5.39	1.00	1.00	7	94.72	Cervix	Umbilical cord	Pooled
6318	343695	W69170	4.94	44.88	9.11	1.00	0.00	7	110.66	Pooled	Heart	Kidney
6320	223274	H86518	6.08	56.97	7.05	1.00	0.00			Eye	LID not found	Other
6321	501868	AA128005	19.13	114.62	5.99	1.00	0.00			Uterus	Lymph	Lung
6324	207636	H59083	35.97	228.38	6.35	2.00	3.00					
6326	346360	W74254	3.42	20.51	5.99	1.00	0.00			Lymph	Heart	-
6329	488145	AA058709	4.34	32.31	7.45	3.00	0.00			Parathyroid	Blood	Uterus
6331	502860	AA128362	21.80	150.03	6.88	1.00	0.00	10	394.98	Head and nec	Uterus	Brain
6341	744980	AA625915	2.38	17.53	7.36	1.00	0.00			Adrenal gland	Blood	Liver
6346	530545	AA112979	8.24	41.48	5.04	1.00	0.00	14	260.52	Nose	Stomach	Lymph
6351	509641	AA058323	478.17	3249.59	6.80	2.00	0.00	11	18.88	Nose	Skin	Adipose
6352	85384	T71965	52.99	317.62	5.99	1.00	0.00	1	145.6	Thyroid	Liver	Adrenal gland
6353	435858	AA701545	6.04	34.49	5.71	2.00	0.00					
6354	1031799	AA609655	15.85	93.01	5.87	1.00	0.00			Germ Cell	Testis	Pool
6355	455121	AA676804	16.59	116.35	7.01	0.00	1.00	19	194.27	Cervix	Colon	Tonsil
6359	236034	H61243	21.79	621.89	28.53	18.00	0.00	11	268.99	Smooth musc	Spleen	Lymph
6360	79000	T61938	10.97	193.22	17.61	4.00	0.00	1	706.84	Adipose	Cervix	Parathyroid
6369	744800	AA644448	7.62	75.32	9.89	5.00	0.00	1	93.22	Peripheral ner	Bone	Germ Cell
6377	877782	AA626787	8.34	47.69	5.72	1.00	0.00					
6385	725308	AA291556	2.25	12.42	5.52	2.00	0.00			Marrow	Esophagus	Ovary
6394	32697	R43605	2.94	40.75	13.86	1.00	0.00	12	427.01	Liver	Brain	Testis
6397	743880	AA634464	9.24	58.62	6.35	1.00	0.00	3	158.88	Umbilical cord	Brain	Blood
6405	740742	AA479891	23.06	118.87	5.15	0.00	1.00	2	357.89	Lymph node	Nose	Gall bladder
6407	731426	AA412064	6.23	34.41	5.52	1.00	0.00			Adrenal gland	Heart	Lung
6408	79726	T62552	6.67	131.55	19.71	8.00	0.00	17	475.65	Eye	Stomach	Breast
6410	742763	AA400186	10.99	58.95	5.36	1.00	0.00			Spleen	Tonsil	Ovary
6412	67330	T49236	15.29	78.34	5.12	1.00	0.00	4	427.9	Tonsil	Eye	Placenta
6418	41647	R52794	3.33	35.58	10.70	1.00	0.00	20	229.43	Muscle	CNS	Brain
6419	252663	H88329	9.76	210.92	21.61	2.00	1.00	8	425.57	Ear	Kidney	Germ Cell
6420	67385	T49309	39.49	225.30	5.71	0.00	1.00	11	276.98	Blood	Foreskin	Prostate
6424	79576	T62849	12.81	77.90	6.08	1.00	0.00	11	221.51	Spleen	Kidney	Tonsil
6425	809946	AA454813	28.02	184.76	6.59	0.00	1.00	3	162.83	Stomach	Colon	Prostate

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6426	383175	AA074222	28.46	168.58	5.92	0.00	1.00	11	240.06	Pancreas	Aorta	Germ Cell
6427	858535	AA633577	11.50	155.33	13.51	0.00	2.00	X	194.42		Cervix	Liver
6440	34070	R44850	66.21	392.88	5.93	1.00	2.00	8	19.4	Brain	LID not found	Other
6443	784174	AA432106	72.21	417.09	5.78	0.00	1.00	3	347.25	Ear	Stomach	Umbilical cord
6445	50130	H16989	2.33	13.13	5.63	0.00	1.00	2	223.28	Brain	LID not found	Other
6450	246430	N53031	4.14	80.65	19.49	11.00	1.00	4	419.22	-	Pool	LID not found
6452	589869	AA148213	24.25	160.39	6.61	0.00	1.00	3	542.75	Umbilical cord	Blood	Kidney
6455	270589	N33258	5.01	37.12	7.41	1.00	0.00	17	96.5	Gall bladder	Stomach	Adrenal gland
6456	20064	R44955	137.13	888.45	6.48	1.00	2.00	19	291.03	Brain	Heart	LID not found
6464	33817	R44717	2.59	14.14	5.45	1.00	0.00			Brain	Breast	Lung
6469	49916	H15296	202.92	1149.89	5.67	1.00	1.00	5	323.36	Breast	Prostate	Pool
6479	592594	AA159578	39.38	483.21	12.27	4.00	0.00	3	199.75	Pancreas	Uterus	Heart
6480	32598	R43721	4.87	29.81	6.12	0.00	1.00	5	644.77	Brain	LID not found	Other
6482	856187	AA630628	166.23	861.50	5.18	0.00	2.00	5	121.59	Cervix	Lymph	Adrenal gland
6490	743230	AA400234	77.96	616.12	7.90	5.00	0.00	11	237.93	Trachea	Parathyroid	Thyroid
6497	49204	H15696	10.03	83.28	8.30	0.00	2.00	8	387.03	CNS	Blood	Eye
6498	431803	AA678021	170.96	1007.34	5.89	1.00	0.00	1	674.5	Gall bladder	Bone	Muscle
6506	840763	AA486072	1502.29	10587.00	7.05	2.00	0.00	19	271.02			
6509	45852	H08862	5.19	162.57	31.34	0.00	1.00	1	639.73	CNS	Adrenal gland	Eye
6521	47356	H10983	1.09	21.25	19.46	2.00	0.00	6	524.72	Brain	LID not found	Other
6523	284908	N66750	30.89	190.53	6.17	0.00	1.00	6	477.69	CNS	Thyroid	Skin
6524	291633	N73448	113.94	920.08	8.08	0.00	2.00			Foreskin	LID not found	Other
6525	47580	H11718	62.53	433.10	6.93	2.00	0.00	5	556.38	Ear	Bone	Brain
6528	39973	R52522	94.50	764.45	8.09	2.00	1.00	15	240.78	Brain	LID not found	Other
6532	488271	AA088214	41.62	309.91	7.45	2.00	1.00	19	-6.83	Foreskin	Uterus	Lung
6546	416851	W87714	35.68	230.40	6.46	2.00	0.00	11	317.39	Breast	Foreskin	Tonsil
6554	280000	N38891	6.63	50.49	7.62	3.00	0.00	7	840.65	CNS	-	Prostate
6562	128515	R10875	8.07	124.83	20.56	4.00	0.00			Pooled	Uterus	-
6570	414994	W93067	39.07	269.43	6.90	1.00	0.00	7	489.94	Mouth	Ear	Bone
6575	347220	W80688	4.39	47.45	10.81	3.00	0.00	22	86.18	Ignore	Smooth musc	Colon
6578	487151	AA043790	33.80	363.84	10.77	3.00	4.00	11	221.61			
6591	199198	R95841	254.66	1824.02	7.16	3.00	0.00	X	93.95	Breast	Placenta	Testis
6598	429210	AA007276	4.26	27.01	6.34	1.00	0.00			Pool	LID not found	Other
6599	365955	AA063598	167.30	1123.88	6.72	2.00	0.00	17	46.83	Tonsil	Heart	Brain
6602	271830	N35156	39.36	239.91	6.09	1.00	0.00			Parathyroid	Foreskin	Pool
6604	324148	W46629	60.99	318.27	5.22	0.00	1.00	5	274.89	-	Kidney	Foreskin
6608	292062	N73309	160.67	1020.03	6.35	0.00	1.00	3	575.4	Esophagus	Adipose	Gall bladder
6622	809585	AA456629	14.13	93.33	6.61	2.00	0.00	22	77.44	Ovary	Colon	Tonsil
6629	487371	AA046700	12.41	140.16	11.29	2.00	0.00	8	476.7	Gall bladder	Bone	Muscle
6633	429932	AA033991	2.56	14.77	5.73	1.00	0.00			Pool	LID not found	Other
6640	811139	AA485739	109.59	2237.65	20.43	3.00	0.00	6	117.94	Small intestine	Thymus	Lung
6644	755689	AA496438	10.58	53.66	5.07	1.00	0.00	12	227.72	Adrenal gland	Ovary	Foreskin
6645	429927	AA034058	1.29	372.24	288.89	1.00	0.00	15	204.36	Pool	LID not found	Other
6648	854444	AA669055	20.16	191.50	9.50	6.00	0.00	6	118.71	Thymus	Skin	Adipose
6672	72395	T51539	11.69	89.65	7.67	1.00	0.00					
6673	365425	AA025246	117.03	728.09	6.22	2.00	0.00			Bone	Heart	Whole embryo
6674	302897	N91145	21.72	126.14	5.81	1.00	0.00			Eye	Blood	Parathyroid
6676	361323	AA017544	4.99	119.62	23.95	14.00	0.00	1	650.68	Stomach	CNS	Eye
6680	811443	AA176581	11.86	111.11	9.37	4.00	0.00	22	107.16	Omentum	Muscle	Heart
6683	490718	AA115761	2.35	46.54	19.79	2.00	0.00			Pooled	Uterus	Placenta
6684	745343	AA625655	3.55	70.07	19.71	2.00	0.00	2	267.98	Small intestine	Pancreas	Colon
6691	306420	N92699	3.99	32.06	8.04	2.00	0.00	8	52.62	Placenta	Tonsil	Parathyroid
6693	490970	AA136666	2.74	37.03	13.49	1.00	0.00			Uterus	Pool	LID not found
6694	795358	AA453485	4.85	41.04	8.46	1.00	0.00					
6696	273546	N33274	63.64	501.27	5.99	0.00	2.00	8	32.75	Smooth musc	Synovial mem	Blood

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6698	269433	N26175	112.45	735.67	6.54	2.00	0.00	8	440.23	Muscle	Foreskin	Heart
6712	447568	AA702422	51.96	309.09	5.95	1.00	2.00					
6718	771241	AA443587	166.98	1484.29	8.89	2.00	2.00	12	397.57			
6720	786256	AA454098	27.04	167.68	6.20	0.00	1.00	15	230.36	Uterus	Lymph	Heart
6721	323500	W45688	295.35	1983.30	6.72	1.00	0.00			Liver	Pooled	Lymph
6728	34098	R44930	9.65	88.35	9.16	2.00	3.00	4	24.02	Brain	LID not found	Other
6730	796278	AA460838	11.29	83.60	7.41	0.00	2.00			Small intestine	Lymph	Tonsil
6731	841396	AA487543	6.54	48.98	7.49	4.00	0.00					
6736	40009	R54034	1.86	10.99	5.85	1.00	0.00	4	-6.08	Brain	Whole embryo	LID not found
6753	757222	AA496149	6.26	449.41	71.83	2.00	0.00			Spleen	Pool	Testis
6759	45807	H08210	7.48	44.72	5.98	1.00	0.00	1	570.96			
6764	22374	T82459	65.53	358.59	5.47	0.00	1.00	6	377.78			
6770	146225	H13688	9.30	108.65	11.68	11.00	1.00	2	545.17	Stomach	Placenta	Pancreas
6771	154172	R52030	8.68	147.36	16.97	6.00	0.00	19	234.91	Colon	Breast	Pooled
6772	22376	T82461	30.98	244.90	7.90	0.00	3.00	15	238.91	Brain	LID not found	Other
6774	725321	AA291749	14.37	323.40	22.50	13.00	0.00			Neural	Adipose	Ear
6776	33860	R44840	43.05	441.17	10.25	3.00	5.00	13	134.61	Brain	Testis	LID not found
6782	47359	H11003	6.25	78.77	12.61	3.00	3.00	6	46.24	Umbilical cord	Umbilical cord	Skin
6784	41789	R59197	14.53	78.43	5.40	0.00	1.00	3	41.9	Aorta	Whole embryo	Brain
6785	49567	H15114	2.70	20.39	7.55	4.00	0.00	15	241.89	Prostate	Brain	LID not found
6787	491751	AA150500	23.88	209.55	8.78	1.00	0.00			Esophagus	Gall bladder	Blood
6788	22393	T87226	11.27	74.60	6.62	0.00	1.00	6	40.6	Brain	LID not found	Other
6789	884482	AA629707	3.20	23.10	7.22	1.00	0.00	21	177.49	Ignore	Parathyroid	Thymus
6792	33894	R44530	2.89	15.20	5.25	1.00	0.00	10	359.28	CNS	Brain	Testis
6796	45512	H08226	11.17	60.40	5.41	1.00	0.00			Skin	Stomach	Placenta
6800	47460	H11464	38.56	365.96	9.49	4.00	3.00			Brain	LID not found	Other
6804	22334	T88939	23.60	245.83	10.41	2.00	2.00			Brain	LID not found	Other
6808	49588	H15153	0.98	5.74	5.86	0.00	1.00	8	316.21	Brain	LID not found	Other
6809	380240	AA012939	13.32	77.41	5.81	0.00	1.00			Thymus	Skin	Adrenal gland
6813	133637	R27615	13.58	213.43	15.71	3.00	3.00			Gall bladder	Thymus	Pooled
6814	26568	R39111	17.06	172.52	10.11	1.00	0.00	8	95.21	Aorta	Ear	CNS
6815	41495	R54073	4.76	39.60	8.32	0.00	1.00	10	446.65	Testis	Brain	Pool
6816	49610	H15288	3.11	19.28	6.19	1.00	0.00	15	116.7	Brain	Lung	Testis
6817	841314	AA487218	12.77	102.08	7.99	2.00	0.00	6	143.7	Ignore	Small intestine	Skin
6819	810801	AA458878	9.55	245.62	25.73	5.00	0.00	1	-3.15	-	Thymus	Foreskin
6820	52021	H22566	1.61	31.48	19.58	8.00	0.00					
6822	261194	H98215	20.67	135.94	6.58	1.00	0.00	1	75.41		Aorta	Parathyroid
6828	263108	H99837	6.38	49.90	7.82	1.00	0.00	5	350.47	Gall bladder	Ear	Skin
6829	51599	H18932	2.30	40.76	17.73	3.00	0.00			Germ Cell	Brain	Colon
6830	592728	AA160870	2.80	14.48	5.17	1.00	0.00	1	537.56	Pancreas	Kidney	Foreskin
6834	278857	N62914	6.63	43.68	6.59	1.00	1.00	12	277.24	CNS	LID not found	Other
6835	611324	AA178819	222.27	1138.84	5.12	1.00	0.00			Eye	Adipose	Prostate
6840	41842	R52681	8.68	88.81	10.23	2.00	5.00			Brain	Kidney	Testis
6842	272616	N36130	270.30	2000.42	7.40	1.00	0.00	3	454.98	Foreskin	LID not found	Other
6844	129020	R10823	13.63	105.83	7.76	0.00	1.00	17	385.82	Nose	Eye	Foreskin
6845	41345	R58985	19.98	110.16	5.51	1.00	0.00	1	132.56	Foreskin	Bone	Brain
6849	73244	T55997	32.67	167.52	5.13	1.00	0.00					
6851	510790	AA102053	66.78	380.33	5.70	0.00	1.00	1	102.83	Cervix	-	Thyroid
6856	40449	R53258	43.97	362.11	8.23	4.00	3.00	2	566.66	Brain	LID not found	Other
6859	841195	AA487070	65.69	631.29	9.58	2.00	0.00	3	162.35			
6863	950355	AA600184	11.65	92.19	7.92	1.00	0.00			Eye	Spleen	Testis
6865	781442	AA428603	4.50	32.34	7.19	1.00	0.00	21	230.92	Ovary	Brain	Testis
6869	45801	H08206	8.48	63.24	7.46	1.00	4.00			Brain	LID not found	Other
6875	41070	R56100	9.76	51.53	5.28	1.00	0.00	19	250.4	Pooled	Spleen	Brain
6876	809738	AA454713	19.84	109.53	5.52	0.00	1.00	17	483.28	Synovial mem	Pooled	Umbilical cord

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6880	50477	H17034	45.26	244.57	5.40	0.00	3.00	2	568.11			
6885	50615	H17513	61.16	399.60	6.53	0.00	1.00	6	118.05	Testis	Brain	Heart
6890	897576	AA496871	12.94	71.13	5.50	0.00	1.00			Thyroid	Pool	Foreskin
6896	40491	R55873	16.09	113.46	7.05	2.00	3.00	2	480.97	Brain	Lung	LID not found
6897	71312	T47625	55.70	682.13	12.25	1.00	2.00			Spleen	Eye	Foreskin
6901	74738	T57359	35.63	190.20	5.34	2.00	0.00	9	392.46	Spleen	Cervix	Ovary
6902	564514	AA121697	20.51	105.24	5.13	0.00	1.00			Lung	LID not found	Other
6903	809455	AA443099	225.23	1135.07	5.04	1.00	0.00			Colon	Aorta	Prostate
6909	86160	T72336	6.50	58.06	8.93	1.00	0.00	X	88.99	Liver	Parathyroid	Cervix
6912	33814	R44714	3.01	23.17	7.70	2.00	0.00			Brain	Pool	LID not found
6914	121256	T96605	24.45	151.19	6.18	1.00	0.00	9	382.37	Adipose	Pool	LID not found
6915	281870	N51838	1.63	9.09	5.56	3.00	0.00			Pooled	CNS	Placenta
6931	133860	R27975	7.46	44.19	5.93	3.00	0.00			Placenta	Colon	LID not found
6939	247089	N57856	0.94	20.21	21.42	1.00	0.00	19	101.7	Blood	Pooled	Parathyroid
6944	291290	N72228	8.49	84.31	9.93	1.00	0.00	X	143.33	Bone	Foreskin	Pool
6948	271076	N29918	9.42	102.30	10.86	6.00	0.00	8	401.87	Foreskin	Placenta	Kidney
6950	199241	R95887	3.56	20.08	5.65	1.00	0.00			Pool	LID not found	Other
6963	133864	R28660	4.19	66.73	15.92	5.00	0.00	12	69.28	Aorta	Cervix	Pancreas
6972	239815	H79538	55.96	335.56	6.00	0.00	1.00	3	162.18	Pool	LID not found	Other
6982	810890	AA459278	7.92	42.08	5.32	1.00	0.00	1	88.34	Breast	Colon	Ovary
6984	270889	N32502	9.52	57.27	6.01	1.00	0.00			Foreskin	Pool	LID not found
6986	125118	R05293	38.74	202.03	5.21	1.00	0.00	9	24.47	Pool	LID not found	Other
6990	758338	AA404278	32.23	169.82	5.27	1.00	0.00			Neural	Germ Cell	Breast
6995	134011	R31262	4.99	35.81	7.17	1.00	0.00			Placenta	Brain	LID not found
7000	291827	N72976	7.25	51.54	7.11	0.00	1.00	9	407.26			
7004	268476	N25798	4.63	27.76	6.00	0.00	1.00			Foreskin	Pool	LID not found
7010	323988	W46433	15.18	104.59	6.89	2.00	0.00	20	267.89	Head and nec	Cervix	Adipose
7012	294535	N71028	6.27	55.78	8.89	3.00	0.00	11	227.2			
7014	428756	AA005219	9.72	72.55	7.47	1.00	0.00	2	519.95	Brain	Ovary	Pool
7017	489800	AA099820	7.65	77.01	10.06	1.00	0.00			Uterus	Colon	Brain
7020	207275	H59618	0.97	5.72	5.90	1.00	0.00	2	334.11	Tonsil	Foreskin	Kidney
7034	307138	N93721	2.30	14.14	6.16	1.00	0.00	11	363.53	Lung	Pool	LID not found
7036	123811	R01448	228.40	1373.17	6.01	1.00	2.00			Pool	LID not found	Other
7037	344854	W72972	7.37	132.81	18.02	8.00	3.00			Kidney	Prostate	Parathyroid
7043	268258	N30006	61.41	614.11	7.54	2.00	0.00	10	508.28	Foreskin	Breast	Placenta
7046	358689	W96473	4.72	26.95	5.70	1.00	0.00			Colon	Pancreas	Lung
7047	324333	AA284109	40.55	225.22	5.55	1.00	0.00			Tonsil	-	Prostate
7053	321886	W37628	17.26	114.54	6.64	1.00	0.00			Aorta	Breast	Tonsil
7057	299182	N70553	4.89	30.57	6.25	0.00	1.00			Spleen	Lung	LID not found
7060	207932	H60514	131.17	903.67	6.89	2.00	2.00			Pool	LID not found	Other
7061	321908	W37680	5.20	98.20	18.89	9.00	3.00			Nose	Parathyroid	Pooled
7064	769600	AA425900	2.06	24.85	12.08	7.00	0.00	5	287.05	Pancreas	Ovary	Colon
7072	250883	N23454	26.30	198.48	7.01	0.00	1.00	3	161.52	Gall bladder	Foreskin	Lymph
7075	143145	R73661	161.71	1126.96	6.97	2.00	0.00	12	246.56			
7076	417059	W87801	12.82	85.35	6.66	2.00	4.00			Kidney	Pool	LID not found
7079	503334	AA134111	14.22	88.89	6.25	1.00	0.00	11	130.57	CNS	Uterus	Placenta
7080	877827	AA625632	1738.50	9099.75	5.23	1.00	0.00	2	174.16	Umbilical cord		Larynx
7087	345034	W72294	7.49	552.19	73.72	5.00	0.00			Breast	Kidney	Placenta
7090	245174	N54456	53.28	299.56	5.62	0.00	1.00			Umbilical cord	Thyroid	Stomach
7092	240878	H90296	120.80	1407.02	11.65	4.00	3.00	8	99.74	Pancreas	Pool	LID not found
7093	347813	W81504	12.41	71.32	5.75	0.00	1.00	1	111.21	Pancreas	Heart	LID not found
7094	468276	AA085759	8.44	81.42	9.65	1.00	0.00	3	43.98	-	Uterus	Foreskin
7096	460114	AA676840	6.39	41.43	6.48	1.00	0.00			Prostate	Lung	Testis
7097	298104	N70759	23.56	169.43	7.19	0.00	1.00	13	268.41	Pooled	Whole embryo	Testis
7106	769712	AA428959	10.64	53.49	5.03	1.00	0.00	4	17.79	Ovary	Parathyroid	Pooled

Table 2A

7108	67625	T49530	7.62	72.88	9.56	0.00	1.00	18	347.76	Uterus	Placenta	Pool
7110	397495	AA701081	3.32	18.27	5.50	2.00	0.00					
7111	47355	H10981	2.26	19.97	8.82	1.00	0.00	5	29.67	Brain	LID not found	Other
7114	264646	N20338	2.28	12.36	5.42	1.00	0.00			Pancreas	Umbilical cord	Blood
7132	68636	T49802	15.29	161.47	10.56	2.00	2.00			Peripheral ner	Cervix	Umbilical cord
7134	51743	H23081	179.73	1030.55	5.73	1.00	0.00	19	283.98			
7139	344430	W73473	7.12	470.67	66.11	6.00	2.00	20	333.71	CNS	Kidney	Heart
7148	70152	T50041	44.92	235.92	5.25	1.00	0.00			Parathyroid	CNS	Thyroid
7152	80226	T64216	0.72	4.13	5.71	0.00	1.00	17	24.51	Neural	Eye	Ovary
7153	146868	R80779	5.70	51.01	8.95	1.00	0.00	11	239.66	Blood	Placenta	Pancreas
7159	79743	T62577	60.57	309.75	5.11	1.00	0.00	7	424.13			
7165	450453	AA682815	5.13	35.84	6.98	0.00	2.00	2	681.46	CNS	Adrenal gland	Pooled
7167	51070	H17115	6.52	37.80	5.80	1.00	0.00	7	511.27	Peripheral ner	Brain	Aorta
7172	77193	T50121	14.64	77.62	5.30	1.00	0.00			Skin	Parathyroid	Foreskin
7187	154472	R54846	61.61	368.99	5.99	1.00	0.00	8	186.21	Synovial mem	Smooth musc	Ear
7194	248412	N68558	3.15	15.91	5.05	1.00	0.00	14	251	Liver	Spleen	Pool
7198	71763	T51290	24.04	319.47	13.29	4.00	5.00	1	619.07			
7209	41548	R66415	14.47	147.95	10.23	5.00	5.00			Brain	LID not found	Other
7215	60882	T40668	49.42	314.59	6.37	0.00	2.00	12	246.56	Placenta	LID not found	Other
7216	40108	R52635	14.47	90.66	6.27	0.00	2.00	1	264.5	Testis	Brain	LID not found
7221	51939	H22956	2.78	45.22	16.25	6.00	1.00			Parathyroid	Brain	CNS
7232	40036	R53442	77.36	628.19	8.12	0.00	4.00	14	175.36	Brain	LID not found	Other
7245	51397	H19417	2.07	10.70	5.16	1.00	0.00	9	21.93	Brain	LID not found	Other
7246	511909	AA088861	85.14	892.20	10.48	5.00	5.00	8	433.96	Small intestine	Colon	LID not found
7247	279577	N48899	41.02	257.30	6.27	0.00	2.00			CNS	LID not found	Other
7248	32095	R42698	84.42	625.57	7.41	4.00	4.00	1	269.5	Uterus	Placenta	Kidney
7253	51103	H19217	1.31	8.03	6.12	1.00	0.00			Brain	LID not found	Other
7254	324122	W46577	70.03	484.02	6.91	0.00	2.00	5	283.38	Aorta	-	Kidney
7277	52432	H23256	1.88	10.30	5.55	0.00	1.00	12	277.88	Brain	LID not found	Other
7278	855523	AA664180	30.62	1750.51	57.17	3.00	0.00	5	580.59	Eye	Synovial mem	Kidney
7285	52066	H24347	2.15	17.94	8.33	1.00	1.00	4	558.61	Pool	Brain	Lung
7287	744565	AA621256	45.43	237.63	5.23	0.00	1.00	6	326.36	Umbilical cord	Smooth musc	Thyroid
7288	40768	R56432	118.71	1367.55	11.52	4.00	2.00			Kidney	Brain	LID not found
7289	39770	R54558	2.09	13.26	6.36	0.00	1.00	5	542.07	Brain	LID not found	Other
7292	61638	T41032	3.96	28.10	6.59	1.00	0.00			Liver	Whole embryo	LID not found
7294	324715	W47362	6.80	107.28	15.77	8.00	0.00	11	262.56	-	Placenta	Kidney
7298	122183	T98628	12.26	66.14	5.40	1.00	0.00			Prostate	Testis	LID not found
7302	810567	AA464578	32.78	171.37	5.23	0.00	1.00	1	562.43	Synovial mem	Thyroid	Blood
7308	430264	AA010557	15.95	129.35	8.11	3.00	5.00	20	74.7	Ear	Placenta	Parathyroid
7314	415250	W91885	51.41	315.39	6.14	2.00	0.00			Pool	LID not found	Other
7322	809609	AA458486	19.20	107.04	5.57	1.00	0.00			Thymus	Skin	Testis
7324	290231	N62273	7.16	43.02	6.01	1.00	0.00					
7332	271280	N34637	211.90	1086.74	5.13	1.00	0.00	12	469.78			
7335	416279	W90323	30.51	351.39	11.52	1.00	0.00			Blood	Germ Cell	Aorta
7338	234121	H70603	24.14	180.89	7.49	2.00	0.00	16	423.94			
7339	281162	N50962	7.04	39.13	5.56	1.00	0.00			Bone	Blood	CNS
7340	289867	N62080	17.77	210.46	11.85	6.00	5.00	8	334.17	CNS	LID not found	Other
7363	178856	H49517	427.45	2222.49	5.20	1.00	0.00	3	726.84	Brain	LID not found	Other
7366	810727	AA457718	9.53	277.32	29.09	10.00	1.00	6	172.31	Nose	Spleen	Placenta
7367	201217	R99293	98.79	571.85	5.79	3.00	0.00	7	586.57	Heart	LID not found	Other
7368	505597	AA147654	3.78	26.48	7.00	1.00	0.00	1	740.99	CNS	Uterus	Pool
7370	428749	AA004652	8.89	71.11	8.00	0.00	4.00			Pool	Colon	LID not found
7383	201855	H48251	107.45	868.70	8.08	2.00	0.00	10	165.42	Nose	Whole embryo	Cervix
7418	855547	AA864195	65.02	863.56	13.28	3.00	0.00	6	118.49	Small intestine	Thymus	Lung
7418	272038	N31948	2.92	92.77	31.75	1.00	0.00	8	91.28	Foreskin	Whole embryo	Germ Cell

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7427	376475	AA041396	104.18	533.03	5.12	1.00	0.00	17	53.69	Lung	Placenta	Ovary
7432	857264	AA569689	17.25	137.53	7.97	0.00	1.00	6	368.74	Brain	Foreskin	Colon
7434	359285	AA016234	36.46	518.88	14.23	0.00	1.00			Foreskin	Heart	Kidney
7440	293925	N63943	129.20	761.43	5.89	1.00	2.00	16	162.07			
7449	416750	W86521	12.78	74.51	5.83	1.00	0.00			Pool	LID not found	Other
7455	210486	H65478	191.51	1175.82	6.14	1.00	0.00	10	499.96	Umbilical cord	Thyroid	Ear
7456	344589	W73144	14.93	512.53	34.56	6.00	0.00	13	136.15	Lymph	Blood	Heart
7462	762782	AA448167	9.71	53.81	5.54	1.00	0.00			Testis	LID not found	Other
7466	272990	N36123	65.27	366.58	5.62	2.00	0.00	3	18.86	Foreskin	Heart	Pool
7468	741960	AA402883	6.99	159.54	22.82	4.00	0.00	9	416.03	Ovary	Whole embryo	Prostate
7480	855910	AA630328	43.72	219.10	5.01	1.00	0.00	14	123.72	Small intestine	Head and nec	Esophagus
7482	284355	N52136	5.42	47.59	8.78	1.00	1.00			CNS	Eye	Kidney
7484	257182	N30553	3.88	66.74	17.21	0.00	1.00	19	244.11	Placenta	Pool	Parathyroid
7488	362059	AA001432	8.32	141.98	17.05	5.00	1.00	18	195.94	Pancreas	Pooled	Eye
7490	24918	R39069	7.28	41.29	5.67	1.00	0.00	9	226.16	Eye	Colon	Aorta
7493	510381	AA055585	37.95	312.68	8.24	2.00	0.00	10	32.49	Eye	Skin	Esophagus
7494	809828	AA455521	13.11	127.97	9.76	1.00	0.00	8	417.63	Tonsil	Blood	Parathyroid
7496	46051	H09064	11.43	63.49	5.55	0.00	1.00	7	624.62	Brain	LID not found	Other
7500	50847	H17929	10.39	60.06	5.78	1.00	0.00	8	276.6	Brain	LID not found	Other
7504	47459	H11453	3.99	111.46	27.93	7.00	0.00	1	192.55			
7512	45531	H08541	1.57	8.90	5.65	2.00	1.00	2	487.92			
7516	50749	H17322	4.74	56.00	11.82	4.00	5.00	8	399.21	Brain	Kidney	LID not found
7517	770424	AA430875	20.00	128.48	6.43	1.00	0.00	9	137.48	Ovary	Blood	Brain
7523	773479	AA427899	303.30	1788.94	5.90	0.00	1.00	6	116.42	Adrenal gland	Lymph	Cervix
7532	50173	H17484	23.31	224.14	9.62	2.00	5.00	2	356.74	Brain	LID not found	Other
7533	32304	R42894	6.10	66.28	10.87	3.00	0.00	3	190.69	CNS	Brain	Eye
7534	742115	AA405800	22.26	175.16	7.87	5.00	0.00	16	48.56	Pooled	Blood	Adrenal gland
7540	22541	T89084	1.02	6.25	6.10	0.00	1.00	8	447.65	Brain	LID not found	Other
7541	140574	R66139	4.20	72.19	17.20	2.00	0.00	16	365.99	Brain	Breast	Prostate
7546	855890	AA630320	18.99	106.74	5.62	1.00	0.00	8	436.63			
7551	69935	T48692	18.11	106.23	5.87	1.00	0.00	10	499.34	Ear	Placenta	CNS
7554	41648	R52796	18.22	94.88	5.21	0.00	1.00			Brain	Testis	Lung
7555	196488	R91539	17.69	110.72	6.26	2.00	0.00	13	147.98	Whole embryo	Pancreas	CNS
7556	34010	R44647	41.18	374.58	9.10	6.00	5.00	16	193.03	Lymph	Brain	LID not found
7557	135630	R31562	10.59	64.53	6.10	2.00	1.00	4	450.16	Placenta	Pancreas	Ovary
7571	743081	AA405901	78.80	579.47	7.35	0.00	1.00			-	Prostate	Kidney
7576	52716	H29245	1.27	15.84	12.58	0.00	2.00			Brain	LID not found	Other
7579	773106	AA425316	18.63	103.70	5.57	1.00	0.00	11	37.97	Skin	Pooled	Germ Cell
7582	291985	N73101	23.66	799.69	33.80	4.00	1.00	5	576.31	Adipose	Stomach	Prostate
7583	50299	H17954	2.84	15.39	5.42	1.00	0.00	19	284.15	Pool	Brain	Lung
7592	51828	H22946	152.46	1025.58	6.73	1.00	3.00			Brain	LID not found	Other
7595	248027	N58372	98.78	613.02	6.21	2.00	2.00	4	437.92	Tonsil	-	Kidney
7600	49993	H28738	15.04	81.94	5.45	0.00	1.00			Brain	LID not found	Other
7601	41607	R54177	222.16	1286.36	5.79	1.00	1.00	3	49.58	Umbilical cord	vein	Synovial membrane
7603	279085	N51705	46.41	280.13	6.04	2.00	0.00	2	356.03	Ovary	Blood	Pooled
7612	262912	H99659	84.43	445.79	5.28	1.00	0.00	14	192.86	Pooled	CNS	Germ Cell
7621	67187	T52652	341.51	1997.97	5.85	1.00	0.00			Thymus	CNS	Pancreas
7624	84211	T72915	29.41	168.43	5.76	1.00	0.00			Liver	Eye	Ovary
7627	609155	AA176867	15.19	96.55	6.36	0.00	1.00			Ear	Muscle	Whole embryo
7631	757265	AA426113	15.72	139.39	8.87	1.00	2.00	1	35.21	CNS	Testis	Germ Cell
7633	50689	H17046	35.92	328.24	9.14	2.00	5.00	10	360.96	Brain	Pool	LID not found
7646	772918	AA479913	21.46	169.22	7.89	0.00	1.00			Aorta	-	Whole embryo
7657	26414	R20662	2.72	26.43	9.72	3.00	0.00	11	259.91			
7660	840062	AA490249	47.31	339.43	7.18	1.00	0.00	1	31.2	Eye	Cervix	Blood
7662	510736	AA099748	5.97	42.15	7.06	1.00	0.00	8	407.58	Colon	LID not found	Other

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7672	46565	H09759	6.60	35.10	5.32	1.00	0.00	8	540.74	Brain	Whole embryo	LID not found
7673	41103	R66769	61.03	633.49	10.38	1.00	3.00			Brain	LID not found	Other
7677	45318	H08734	15.21	76.21	5.01	0.00	1.00			Parathyroid	Tonsil	Whole embryo
7688	284105	N20577	79.93	400.02	5.00	1.00	0.00	15	145.04	Eye	Foreskin	Lymph
7700	281687	H98780	324.08	1849.12	5.71	1.00	0.00	19	271.02			
7707	135106	R33037	7.07	49.53	7.00	1.00	0.00			Pooled	Germ Cell	Placenta
7708	282334	H99384	220.65	1603.13	7.27	3.00	0.00	7	95.03	Foreskin	LID not found	Other
7712	272531	N35889	23.74	130.74	5.51	2.00	0.00	4	353.04			
7714	782269	AA431746	10.11	52.08	5.15	1.00	0.00	7	672.99	Adrenal gland	Tonsil	Brain
7715	795730	AA460282	9.82	52.06	5.30	1.00	0.00	14	18.43	Ear	CNS	Pooled
7718	366763	AA029331	11.83	97.51	8.24	2.00	0.00	7	646.44	Blood	Muscle	Lung
7720	269787	N27145	6.78	39.34	5.80	1.00	0.00	X	351.05	Foreskin	Pancreas	Whole embryo
7722	809467	AA443105	11.92	67.44	5.66	0.00	1.00	19	223.66	Blood	Spleen	Germ Cell
7731	360025	AA063573	2.14	12.19	5.69	1.00	0.00			Placenta	Tonsil	Heart
7740	415111	W93147	6.44	43.25	6.71	3.00	0.00	5	584.16	Pool	LID not found	Other
7742	430336	AA010619	0.92	6.25	6.96	1.00	0.00	3	732.12	Pool	LID not found	Other
7748	429728	AA011678	10.31	67.94	6.59	0.00	1.00	10	250.29	Prostate	Pool	LID not found
7750	427931	AA001983	4.22	22.29	5.28	1.00	0.00			Tonsil	Pool	LID not found
7751	288741	N59219	5.70	43.43	7.62	2.00	0.00	11	365.61	CNS	Placenta	Germ Cell
7752	375853	AA039857	20.17	121.67	6.03	1.00	1.00	15	46.33	Foreskin	Heart	LID not found
7762	129862	R17096	6.39	65.40	7.79	1.00	0.00	11	253.29	Aorta	Colon	Brain
7771	291059	N72116	135.69	899.23	6.62	3.00	0.00	12	226.12	CNS	Foreskin	Pancreas
7774	427893	AA001359	9.85	56.52	5.74	1.00	0.00			Pool	LID not found	Other
7780	429499	AA011480	8.29	43.93	5.30	0.00	1.00	8	108.41	Pool	Prostate	LID not found
7791	415562	W80701	5.98	359.44	60.12	20.00	1.00			Neural	Pool	Brain
7798	502593	AA136049	1.00	7.22	7.25	1.00	0.00	12	17.4	Uterus	Germ Cell	Testis
7804	293097	N68738	42.15	344.25	8.17	3.00	3.00					
7806	505183	AA151111	112.19	620.11	5.53	1.00	0.00	1	535.4	Uterus	Eye	Pool
7814	810002	AA454864	21.22	191.72	9.04	6.00	1.00	3	111.36	Adipose	Ovary	Blood
7816	298062	N70734	3.63	27.97	7.71	2.00	0.00	1	665.61	Heart	Adrenal gland	Whole embryo
7819	364865	AA035745	5.14	27.49	5.34	1.00	0.00	7	476.39	Germ Cell	Breast	Heart
7820	247462	N54157	17.34	100.47	5.79	0.00	2.00	1	108.17	Pool	LID not found	Other
7821	376333	AA041293	10.15	68.51	6.75	1.00	0.00	22	17.11			
7827	197285	R86970	1.90	12.09	6.36	1.00	0.00			Tonsil	Whole embryo	Pool
7833	490784	AA133194	1.33	8.69	6.53	1.00	0.00	17	269.6	Muscle	CNS	-
7836	211367	H66670	482.02	3163.12	6.54	0.00	2.00	5	504.52	Liver	Pooled	Foreskin
7840	289428	N63949	9.38	52.36	5.58	1.00	0.00			CNS	Spleen	Brain
7842	129227	R11047	27.31	185.70	6.80	0.00	1.00	7	592.45	Tonsil	Kidney	Pool
7843	196579	R91689	90.78	592.31	6.52	2.00	0.00			Kidney	Pool	LID not found
7844	211865	H66710	7.08	120.70	17.10	3.00	0.00	2	599.98	Colon	Pool	LID not found
7846	810263	AA464728	51.66	303.66	5.88	1.00	0.00	9	394.49	Ovary	Prostate	Parathyroid
7847	417867	W90128	62.61	526.71	8.41	2.00	0.00	22	77.53	Smooth muscle		Nose
7852	296452	N74625	7.86	104.35	13.28	4.00	3.00			Pool	LID not found	Other
7854	810320	AA464140	3.47	25.03	7.21	2.00	0.00			Ovary	LID not found	Other
7858	259017	N32811	72.73	450.62	6.20	2.00	0.00	1	87.67	Blood	Lymph	Placenta
7860	293110	N63846	44.70	732.45	16.39	3.00	3.00			Pool	LID not found	Other
7862	770860	AA434388	280.85	2734.72	9.74	2.00	0.00	5	387.22			
7863	357138	W93523	7.98	41.66	5.22	1.00	0.00			Uterus	Heart	Pool
7867	201071	R99847	123.03	1038.86	8.44	3.00	0.00					
7876	72426	T51592	135.03	1085.12	8.04	2.00	0.00	3	726.64	Esophagus	Spleen	Prostate
7878	212115	H66885	179.06	1043.98	5.83	2.00	0.00	11	26.79	Pooled	Placenta	Blood
7883	741977	AA401441	51.32	599.25	11.68	2.00	0.00	6	116.59	Liver	Gall bladder	
7900	72616	T51995	5.01	41.17	8.22	2.00	0.00	20	36.48		Blood	Kidney
7901	624443	AA181333	1.35	16.06	11.88	1.00	0.00	8	445.78	Adipose	Thyroid	Umbilical cord
7908	73561	T55592	12.72	78.28	6.15	1.00	0.00	4	444.53	Stomach	Spleen	Ear

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7915	342181	W63749	16.94	317.86	18.76	1.00	0.00	18	414.52	Thyroid	Foreskin	CNS
7916	32517	R43271	6.35	38.06	5.99	2.00	0.00	18	193.03			
7922	141485	R73584	3.38	28.83	8.54	1.00	0.00			Pancreas	Placenta	Kidney
7927	52226	H23265	3.65	61.73	16.93	7.00	1.00			Brain	Ovary	Uterus
7930	69184	T54144	187.62	1000.39	5.33	0.00	1.00			Head and nec	Thymus	Cervix
7936	80912	T70032	64.91	520.69	8.02	0.00	4.00			CNS	Lung	LID not found
7937	194236	R83277	97.67	759.02	7.77	1.00	3.00	1	151.73	Pooled	Germ Cell	Whole embryo
7938	41358	R59167	38.17	457.85	12.00	0.00	1.00			Uterus	Whole embryo	Lung
7940	72016	T52325	94.28	859.21	9.11	0.00	2.00			Smooth musc	Larynx	Foreskin
7949	970613	AA683102	25.48	161.66	6.35	2.00	0.00	8	466.43	Small intestine	Smooth musc	Ear
7954	433307	AA699732	4.03	39.06	9.69	0.00	1.00					
7961	243159	H94471	4.48	52.60	11.73	6.00	2.00	5	344.82	Thyroid	Umbilical cord	Blood
7968	85224	T71578	54.33	323.37	5.95	0.00	1.00					
7977	33999	R44538	26.16	207.06	7.92	2.00	0.00	19	61.79	Ear	Ovary	Heart
7985	34014	R44564	2.16	14.37	6.65	2.00	1.00	5	499.95	Brain	LID not found	Other
7992	46919	H10226	12.04	64.81	5.38	2.00	2.00			Pancreas	Brain	LID not found
7993	46287	H09620	4.66	31.48	6.75	1.00	2.00	1	553.94	Brain	Pool	LID not found
7994	770704	AA476294	106.98	1442.59	13.48	0.00	3.00	2	718.03	Stomach	Esophagus	Synovial membrane
7995	839698	AA504858	30.40	421.81	13.86	1.00	0.00	4	672.97	Eye	CNS	Uterus
7997	51747	H24327	15.84	124.19	7.84	2.00	3.00			Brain	LID not found	Other
8001	41850	R52786	2.93	49.37	16.84	4.00	0.00	17	60.19	Placenta	Brain	LID not found
8005	49687	H15250	2.26	22.85	10.10	2.00	2.00	22	67.29			
8012	71591	T48011	28.49	162.69	5.71	2.00	0.00			Spleen	Lung	LID not found
8013	50895	H18456	2.18	13.55	6.20	0.00	1.00	3	459.29	Brain	LID not found	Other
8021	50240	H17063	8.03	48.47	6.16	2.00	3.00	1	92.61			
8023	78736	T61888	9.63	66.65	6.92	0.00	2.00	3	449.6	Adipose	Skin	-
8025	52543	H23482	6.32	39.56	6.26	1.00	0.00	6	443.43	Parathyroid	Prostate	Tonsil
8028	69893	T48649	289.13	3420.38	11.83	2.00	0.00			Thyroid	Placenta	LID not found
8029	50860	H17981	5.06	41.26	8.15	4.00	4.00	1	49.6	Brain	LID not found	Other
8032	45999	H09317	98.43	1055.20	10.94	3.00	4.00	2	358.3	Brain	LID not found	Other
8039	730288	AA412509	16.30	105.82	6.49	1.00	1.00			Adipose	Tonsil	Blood
8045	51020	H19312	88.68	821.16	9.26	2.00	0.00			Brain	LID not found	Other
8055	34364	R44210	23.89	225.88	9.46	4.00	0.00	4	74.59	Brain	LID not found	Other
8057	47452	H11448	48.02	482.46	10.48	3.00	3.00	1	841.15	Prostate	-	Brain
8058	592111	AA150532	5.84	76.09	13.03	5.00	0.00	12	226.02	Larynx	Skin	Esophagus
8059	795837	AA461511	15.79	170.63	10.81	1.00	0.00			Testis	LID not found	Other
8061	49291	H15653	211.47	1731.38	8.19	2.00	2.00	9	59.14	Foreskin	Uterus	Brain
8063	773445	AA426049	56.11	307.25	5.48	1.00	0.00	3	546.7	Small intestine	Head and nec	Synovial membrane
8070	795758	AA460304	115.08	797.22	6.93	1.00	0.00	16	471.03	Thyroid	Breast	-
8086	811138	AA485730	21.28	287.53	13.51	1.00	0.00			Marrow	Bone marrow	Synovial membrane
8087	429685	AA011598	16.54	142.66	8.63	6.00	0.00			Pool	LID not found	Other
8096	365004	AA024832	507.22	3348.21	6.60	2.00	0.00	X	245.06	CNS	Heart	Germ Cell
8098	416945	W87710	22.16	168.26	7.59	4.00	3.00	2	557.51	Pool	Prostate	Colon
8099	306921	N91962	37.34	212.50	5.69	1.00	0.00			Aorta	Whole embryo	Adrenal gland
8103	194156	H51050	29.21	180.89	6.19	2.00	0.00					
8104	359684	AA011100	2.87	19.37	6.74	1.00	0.00			Brain	CNS	Heart
8106	488885	AA043092	8.85	135.78	15.35	6.00	1.00	15	245.32	Eye	Uterus	Colon
8111	194023	H51271	27.11	186.67	6.89	1.00	0.00	17	460.48	Ignore	Pool	LID not found
8112	282315	N51961	19.02	141.62	7.44	3.00	0.00			Spleen	CNS	LID not found
8116	298936	N71147	21.75	165.68	7.62	0.00	3.00	1	251.6	CNS	Lung	LID not found
8118	358936	W92233	3.60	19.07	5.01	1.00	0.00			Lymph node	Breast	Germ Cell
8119	366783	AA029703	7.16	43.55	6.09	1.00	0.00	22	17.11	Heart	-	Whole embryo
8122	811038	AA485424	20.92	129.21	6.18	1.00	0.00	11	20.5	Ovary	CNS	Blood
8127	279392	N48700	2.36	13.17	5.58	1.00	0.00			CNS	Colon	Pool
8128	770840	AA427733	4.27	75.03	17.59	3.00	0.00	12	259.32	Ovary	CNS	Lymph

Table 2A

8144	306066	N91003	5.22	64.81	12.42	2.00	1.00			CNS	Adrenal gland	Parathyroid
8154	209189	H83959	58.77	580.30	10.04	3.00	0.00	8	474.75	Pool	LID not found	Other
8162	277134	N40917	5.84	30.71	5.26	1.00	0.00			Blood	Adrenal gland	CNS
8163	289609	N70848	82.67	502.00	6.07	2.00	0.00	5	626.75			
8165	491097	AA136869	6.21	36.83	5.93	1.00	0.00			Uterus	Colon	Pool
8166	770969	AA430629	1200.45	6826.70	5.69	1.00	0.00			Blood	Ovary	Colon
8172	325641	W51985	7.29	46.71	6.41	0.00	1.00	19	243.59			
8176	884644	AA629897	4.67	168.95	36.21	6.00	0.00	16	63.51	Synovial mem	Umbilical cord	Lymph node
8178	283968	N53360	89.68	939.12	10.47	2.00	0.00	4	466.22	Pool	LID not found	Other
8182	771142	AA427778	140.67	813.47	5.78	1.00	0.00			Gall bladder	Umbilical cord	Foreskin
8183	277187	N40952	19.94	118.12	5.92	1.00	0.00	12	56.88	Spleen	Blood	CNS
8184	460487	AA677706	3.07	665.15	216.92	1.00	0.00	11	71.41	Trachea	Bone marrow	Pooled
8189	487317	AA043800	3.53	22.09	6.26	1.00	0.00			Adrenal gland	Adipose	Uterus
8191	811612	AA455013	8.83	111.24	12.60	2.00	0.00					
8192	138369	R68108	10.67	58.09	5.44	1.00	0.00	1	576.51			
8193	427697	AA001884	36.11	198.63	5.50	1.00	0.00			Pool	LID not found	Other
8194	245688	N55355	29.29	263.98	9.01	3.00	0.00			Colon	Pool	LID not found
8195	347035	W81135	36.83	219.77	5.97	0.00	1.00	1	553.01	Gall bladder	Thyroid	Breast
8196	780947	AA429681	5.58	30.05	5.38	2.00	0.00	19	272.65	Peripheral ner	Germ Cell	Pancreas
8197	501479	AA115328	1.91	21.54	11.30	6.00	0.00			Uterus	Kidney	LID not found
8205	501654	AA127865	5.30	47.94	9.05	3.00	0.00			Uterus	Lung	LID not found
8208	795755	AA460313	4.40	46.86	10.66	1.00	0.00			Testis	Parathyroid	Kidney
8208	1035889	AA629189	3.86	78.59	20.38	2.00	1.00	12	227.72	Esophagus	Prostate	Whole embryo
8215	207838	H60298	4.92	68.36	13.91	1.00	0.00	2	44.64	Pool	Ovary	LID not found
8216	855521	AA664179	113.25	1550.11	13.69	5.00	0.00	12	227.72	Colon	Omentum	Lymph node
8217	430073	AA010000	5.68	42.92	7.56	0.00	2.00			Pool	LID not found	Other
8219	322641	W15318	2.21	29.98	13.56	2.00	0.00	10	549.96			
8220	361122	AA017379	5.73	57.70	10.07	1.00	0.00	3	516.66	Stomach	Eye	Cervix
8229	809857	AA455128	19.13	101.19	5.29	1.00	0.00	7	422.9	Ovary	Uterus	Testis
8231	195357	R88992	183.22	1413.03	7.71	2.00	0.00	8	397.3	Thymus	Foreskin	Placenta
8233	417761	W88725	16.49	325.08	17.58	6.00	0.00			Prostate	Pool	LID not found
8234	291594	N67810	155.42	922.84	5.94	2.00	0.00			Foreskin	Lung	Pool
8239	192198	H41144	186.31	2363.91	12.69	2.00	0.00	22	37.19			
8240	586796	AA133469	13.32	81.91	6.15	2.00	0.00	17	309.04	Small Intestine	Colon	LID not found
8248	869375	AA679907	9.58	94.38	9.85	6.00	0.00	15	309.17			
8250	291241	N72210	35.63	295.93	8.30	2.00	0.00					
8254	770898	AA434411	16.63	83.65	5.03	1.00	0.00	7	524.94	Whole embryo	Ovary	Colon
8257	510002	AA052932	1.07	27.77	25.95	2.00	1.00	9	26.78	Gall bladder	Blood	Lymph
8258	277186	N40945	2.83	27.65	9.77	3.00	0.00	11	253.83	Head and nec	Blood	Pancreas
8263	49953	H29276	32.06	332.56	10.37	4.00	3.00	14	151.92	Brain	LID not found	Other
8264	40277	R55658	1.75	9.54	5.46	1.00	0.00	7	680.09	Brain	LID not found	Other
8265	263118	N20106	3.57	17.97	5.03	0.00	1.00	12	336.84	Whole embryo	Foreskin	Pool
8272	47400	H10413	2.62	20.09	7.67	2.00	0.00			Brain	LID not found	Other
8276	24061	R37566	9.23	51.58	5.59	1.00	0.00	7	467.91	Whole embryo	CNS	Brain
8278	755228	AA496334	3.49	55.93	16.04	1.00	0.00			Ignore	Brain	Prostate
8280	52704	H29227	2.96	64.43	21.80	10.00	1.00	3	411.77	Germ Cell	Brain	-
8289	177772	H45976	6.41	49.22	7.68	2.00	0.00			Eye	Ear	Brain
8292	41835	R54212	2.70	53.38	19.74	4.00	0.00			Brain	LID not found	Other
8314	845663	AA670155	32.08	204.40	6.37	2.00	0.00	11	125.76			
8317	460686	AA700322	4.23	87.39	20.68	3.00	0.00					
8320	46383	H09601	50.03	357.26	7.14	0.00	5.00			Breast	Pool	Brain
8329	345525	W72437	49.22	522.50	10.61	0.00	1.00	5	355.29	Bone	Muscle	Kidney
8346	490819	AA122287	6.91	36.19	5.24	1.00	0.00	11	277.15	Stomach	Eye	Uterus
8353	796176	AA461098	88.06	496.57	5.64	1.00	0.00			Smooth musc	Umbilical cord	CNS
8359	772377	AA404565	46.90	236.81	5.05	1.00	0.00	6	154.22	Breast	Kidney	Lung

Table 2A

8362	784017	AA443706	0.72	7.06	9.87	1.00	1.00			Aorta	Lung	Brain
8366	782843	AA448281	4.33	40.52	9.36	4.00	0.00			Testis	Pool	LID not found
8374	487327	AA045524	9.70	288.81	29.78	6.00	0.00			Uterus	Heart	Breast
8376	49203	H15695	8.34	147.99	17.74	2.00	0.00	4	494.82	Prostate	Whole embryo	Kidney
8377	52618	H29303	71.11	490.54	6.90	1.00	1.00	X	245.06			
8378	730439	AA469975	15.98	103.37	6.48	3.00	0.00	14	276.76	Nose	Blood	Eye
8384	784212	AA446864	7.32	44.00	6.01	2.00	0.00	5	62.6	Ear	Liver	Parathyroid
8386	429640	AA011637	15.77	111.34	7.06	0.00	3.00			Cervix	Lymph	Pool
8388	787038	AA463516	82.25	417.75	5.08	1.00	0.00	3	61.75	Smooth musc	Larynx	Gall bladder
8392	73785	T54672	6.75	56.21	8.33	1.00	0.00	2	127.04	Spleen	Tonsil	Brain
8395	796887	AA496247	23.97	221.39	9.24	1.00	0.00	15	164.58	Stomach	Blood	Whole embryo
8399	950700	AA608572	103.96	889.29	8.55	2.00	0.00	10	363.57	Bone	Germ Cell	Colon
8402	626088	AA211459	104.93	530.01	5.05	0.00	1.00	12	277.72	Head and nec	Cervix	Gall bladder
8405	796127	AA460965	132.31	713.23	5.39	1.00	1.00	19	66.18	Placenta	Whole embryo	Parathyroid
8413	71557	T47971	126.36	866.36	6.70	2.00	0.00					
8416	51015	H19307	10.51	66.75	6.25	1.00	0.00	8	401.76	Foreskin	Bone	CNS
8419	784229	AA446887	382.95	3025.93	7.90	2.00	2.00	8	436.1	Ear	Foreskin	Kidney
8422	773073	AA425302	34.62	205.57	5.94	2.00	0.00	3	897.77	Thyroid	Eye	Germ Cell
8426	430172	AA010247	19.15	124.13	6.48	0.00	1.00	11	168.43	Pool	LID not found	Other
8433	51165	H17143	163.93	1729.28	10.55	4.00	4.00	2	354.01	Aorta	Blood	Foreskin
8438	588053	AA135001	6.15	53.05	8.62	1.00	0.00	11	428.27			
8445	62263	T41173	34.90	254.14	7.28	0.00	1.00	21	137.65	Smooth musc	Stomach	Uterus
8446	253733	N22552	7.41	46.90	6.33	1.00	0.00	6	13.47	Ear	Pooled	Heart
8478	418350	W92772	5.67	36.30	6.40	2.00	0.00	10	392.03	Pool	LID not found	Other
8482	307157	N93740	157.92	1059.74	6.71	1.00	0.00	16	372.61	Lung	Pool	LID not found
8486	487981	AA054722	75.56	453.46	6.00	1.00	0.00	13	31.46	Ear	Foreskin	CNS
8495	504372	AA142842	53.29	284.48	5.34	1.00	0.00	17	53.48	Aorta	Whole embryo	Germ Cell
8498	247261	N57950	46.41	284.35	6.13	2.00	0.00			Synovial mem	Breast	Umbilical cord
8502	297899	N70059	30.25	226.02	7.47	2.00	1.00	3	491.75	Stomach	Lung	Colon
8508	241648	H91615	13.30	131.27	9.87	3.00	0.00	20	28.83			
8510	782794	AA448182	14.21	77.12	5.43	1.00	0.00			Tonsil	Testis	Colon
8516	302160	N79989	7.88	68.22	8.66	1.00	0.00	8	510.24	Eye	Lung	Testis
8528	291558	N72882	107.53	554.40	5.16	1.00	0.00	3	410.63			
8531	809731	AA455509	7.08	72.02	10.17	1.00	0.00	17	-8.01	Foreskin	Breast	Ovary
8532	258242	N30655	5.79	53.88	9.31	1.00	0.00	10	518.96	Brain	Pool	Heart
8538	811048	AA485428	10.80	67.50	6.25	1.00	0.00	3	460.63	Adipose	Stomach	Heart
8542	201440	R99105	7.19	87.44	12.16	8.00	0.00	11	232.44	Pool	LID not found	Other
8547	203008	H54263	40.12	205.61	5.12	1.00	0.00			Germ Cell	Parathyroid	Prostate
8558	771257	AA443594	4.60	24.67	5.36	1.00	0.00			Ovary	Tonsil	LID not found
8560	454083	AA676898	17.83	149.22	8.37	4.00	0.00	16	442.79	Pool	Whole embryo	Brain
8563	204478	H58806	3.94	20.02	5.08	1.00	0.00			Colon	Pool	LID not found
8564	810457	AA457137	5.39	58.93	10.94	6.00	0.00			Ovary	Pooled	Lung
8568	853368	AA663310	50.44	283.41	5.62	0.00	1.00	18	13.7	Skin	Spleen	Adrenal gland
8573	325544	AA284265	81.88	513.18	6.27	1.00	0.00			-	Umbilical cord	Bone
8576	754034	AA479058	22.60	236.44	10.42	4.00	0.00			-	Pool	LID not found
8582	809585	AA458480	16.39	149.75	9.13	2.00	0.00	X	245.06	Pooled	Ovary	LID not found
8584	345553	W73889	16.43	129.72	7.90	2.00	0.00	3	143.02	Pooled	Whole embryo	Lung
8588	430235	AA010223	6.40	60.32	9.43	2.00	0.00	1	553.7	Placenta	Eye	Pool
8591	428507	AA004525	28.87	227.26	7.87	0.00	1.00	19	235.13	Liver	Prostate	Pool
8596	234955	H73628	48.67	495.61	10.18	2.00	3.00			Pool	LID not found	Other
8602	134997	R31793	6.65	43.28	6.51	3.00	0.00			Pooled	Eye	Placenta
8604	129320	R12679	13.13	89.28	6.80	1.00	0.00	4	443.88	Pool	LID not found	Other
8605	325169	AA284261	7.09	48.79	6.88	2.00	0.00			-	LID not found	Other
8606	324220	AA284184	295.30	3155.68	10.69	2.00	0.00			-	Testis	Whole embryo
8610	252491	H87459	6.66	118.24	17.74	2.00	0.00	11	237.77	Adipose	Placenta	Pool

Table 2A

8613	490023	AA114966	8.14	54.87	6.74	0.00	1.00					
8615	365517	AA009593	109.91	1055.36	9.60	2.00	0.00	10	185.83	Aorta	Kidney	Foreskin
8624	855786	AA864040	79.37	1511.68	19.05	0.00	1.00	14	276.5	Cervix	Adipose	Thymus
8625	259066	N32832	47.84	282.39	5.90	1.00	2.00	8	103.36			
8627	324946	AA284281	73.80	690.33	9.35	2.00	0.00			-	Lung	Brain
8628	233277	H77494	35.54	334.54	9.41	3.00	3.00			Placenta	Kidney	Pool
8630	810446	AA457115	17.82	123.40	6.93	2.00	0.00	1	102.62	Pooled	Placenta	Colon
8631	430186	AA010188	3.28	53.80	16.41	4.00	0.00			Muscle	Whole embryo	Colon
8632	454440	AA677306	5.90	46.40	7.87	0.00	1.00	X	231.75	Cervix	Placenta	Pool
8633	110903	T90446	97.42	587.97	6.04	2.00	0.00	19	250.6	Germ Cell	Pool	LID not found
8635	262023	H98683	109.20	1285.23	11.77	2.00	1.00	20	251.44	Gall bladder	Aorta	CNS
8636	289060	N63598	39.43	267.24	6.78	0.00	2.00	5	501.96			
8639	430320	AA010406	30.29	330.73	10.92	4.00	0.00			Pool	LID not found	Other
8645	460584	AA700419	8.79	48.75	5.32	1.00	1.00					
8654	433111	AA680407	13.60	91.23	6.71	1.00	0.00			Blood	CNS	Heart
8655	731433	AA412217	17.36	106.73	6.15	0.00	1.00			Adrenal gland	Blood	Tonsil
8656	85804	T72068	7.62	39.98	5.24	1.00	0.00			Liver	Ovary	Pool
8658	770388	AA430665	5.21	182.53	35.06	22.00	1.00	7	424.99	Larynx	Breast	Pancreas
8675	212188	H68848	39.11	222.54	5.69	1.00	1.00	17	414.56	Liver		Spleen
8678	39843	R53527	7.40	45.85	6.20	1.00	0.00			Brain	LID not found	Other
8681	178825	H49511	2.67	90.53	33.88	2.00	0.00	11	412.13	Brain	Thyroid	Adrenal gland
8683	856454	AA630794	115.39	690.52	5.98	0.00	2.00	11	230.42	Pancreas	Foreskin	Cervix
8684	68618	T53431	11.34	153.67	13.55	5.00	0.00			Pancreas	Adrenal gland	Placenta
8688	84695	T74586	14.15	75.79	5.36	1.00	0.00	9	400.09			
8699	454872	AA677185	22.04	160.52	7.28	6.00	0.00	10	336.4	Head and nec	Parathyroid	Placenta
8706	725877	AA292226	50.62	1877.11	37.08	9.00	0.00	X	351.05	Smooth musc	Foreskin	Skin
8710	197520	H52110	26.13	168.15	6.44	1.00	0.00	20	267.89	Head and nec	Cervix	Adipose
8713	859807	AA668527	79.02	778.76	9.86	0.00	3.00			Spleen	Testis	LID not found
8717	884690	AA630016	3.72	19.19	5.17	0.00	1.00	21	144.63			
8720	52186	H24352	2.22	59.44	26.81	0.00	1.00	4	499.15	Brain	LID not found	Other
8727	34400	R44353	16.40	120.24	7.33	3.00	0.00	6	114.88	Eye	Brain	LID not found
8731	795321	AA454175	25.52	140.36	5.50	1.00	0.00			Aorta	Eye	Tonsil
8743	843046	AA488413	11.07	63.20	5.71	1.00	0.00	19	21.55	Cervix	Synovial mem	Bone
8745	49275	H16701	3.65	23.12	6.33	0.00	1.00	17	368.42	Eye	Brain	Pool
8747	487165	AA045074	11.52	64.17	5.57	2.00	0.00	20	300.46			
8750	897427	AA489470	10.67	66.03	6.19	2.00	0.00	10	554	Brain	Whole embryo	Blood
8753	50613	H17511	1.98	17.07	8.71	3.00	0.00	2	652.25	Brain	LID not found	Other
8757	46471	H09778	153.24	952.99	6.22	1.00	1.00	20	210.44	Kidney	Brain	LID not found
8765	52191	H24355	11.70	70.59	6.03	3.00	0.00			Brain	LID not found	Other
8768	625623	AA186605	21.84	148.76	6.81	0.00	1.00	2	97.57	Placenta	Eye	Umbilical cord
8769	47225	H11270	22.09	228.61	10.35	4.00	5.00	4	45.06			
8773	46907	H10204	2.46	16.77	6.81	1.00	0.00	3	678.04	Brain	Placenta	Pool
8776	50593	H17625	160.22	1147.64	7.16	2.00	5.00	4	422.79	Brain	LID not found	Other
8779	291618	N67816	155.92	926.61	5.94	1.00	0.00			Gall bladder	CNS	Parathyroid
8786	859422	AA686180	334.58	2292.62	6.85	1.00	3.00	19	89.74	Muscle	Brain	Adrenal gland
8790	416711	W86608	7.44	37.62	5.06	0.00	1.00			Pool	LID not found	Other
8791	796357	AA456139	4.11	42.44	10.32	2.00	0.00			CNS	Whole embryo	Germ Cell
8792	51542	H20757	341.33	3089.48	8.99	3.00	0.00			Brain	LID not found	Other
8794	841070	AA486761	93.93	879.52	9.36	0.00	1.00	1	102.83	Cervix	-	Thyroid
8796	72083	T52375	42.52	392.08	9.22	1.00	3.00			Spleen	LID not found	Other
8797	49240	H15435	21.21	121.09	5.71	1.00	0.00			Ear	Adipose	CNS
8800	51485	H24018	2.09	12.35	5.92	1.00	0.00	X	350.62	Brain	LID not found	Other
8809	47149	H10993	56.98	302.36	5.31	0.00	2.00	3	626.88	Ear	Parathyroid	Germ Cell
8812	73756	T54643	13.42	138.78	10.19	3.00	0.00			Spleen	LID not found	Other
8817	46197	H09245	2.84	19.93	7.03	1.00	3.00	5	631.78	Brain	Pool	LID not found

Table 2A

8818	80336	T65736	47.65	345.61	7.26	1.00	0.00	1	545.68	Thymus	Spleen	Adipose
8819	810239	AA464709	53.40	442.34	8.28	2.00	2.00			CNS	Ovary	Prostate
8820	73787	T54673	92.77	901.06	9.71	3.00	3.00	15	227.19	Spleen	LID not found	Other
8822	133454	R27457	59.50	389.64	6.55	0.00	1.00	12	205.02	Spleen	Whole embryo	Prostate
8823	1032048	AA610040	93.15	790.01	8.48	2.00	0.00					
8824	52917	H29231	183.04	1622.27	8.86	3.00	2.00	15	215.11			
8829	50508	H17506	88.19	1092.05	12.38	2.00	0.00			Colon	CNS	Whole embryo
8842	415447	W80361	36.08	244.91	6.79	3.00	1.00			Pool	LID not found	Other
8844	276920	N39449	12.98	79.23	6.11	1.00	0.00			CNS	LID not found	Other
8863	347772	W81603	28.40	187.51	6.60	1.00	1.00			Kidney	Heart	Brain
8864	429011	AA004719	66.75	354.07	5.30	1.00	0.00	16	113.68	Pool	LID not found	Other
8871	415229	W81879	4.29	180.46	42.05	9.00	2.00	1	334.46	Kidney	Colon	Pool
8875	810459	AA457138	9.49	113.26	11.94	2.00	1.00	10	188.68	Pooled	Eye	Kidney
8879	203888	H56640	24.70	153.94	6.23	1.00	0.00					
8883	240509	H90767	85.64	499.68	5.83	3.00	0.00	11	254.48	Pool	Brain	LID not found
8891	416627	W86630	23.52	121.21	5.15	1.00	0.00	2	647.14	CNS	Liver	Eye
8900	299465	N71080	109.26	586.83	5.39	1.00	0.00	18	-10.98	Prostate	Pool	LID not found
8903	204596	H57060	2.21	12.32	5.57	1.00	0.00			Pool	LID not found	Other
8911	204661	H57130	3.26	51.45	15.78	3.00	0.00	5	455.8	Cervix	Pool	LID not found
8915	345081	W74802	2.11	18.88	8.93	7.00	0.00	8	438.5	Stomach	Breast	Heart
8938	809993	AA454881	146.42	1591.08	10.87	2.00	0.00			Ovary	Whole embryo	Lung
8960	289606	N59270	10.72	67.63	6.31	1.00	0.00	4	615.42	Synovial mem	Lung	LID not found
8963	771128	AA429398	4.51	33.08	7.33	1.00	0.00	8	-14.62	Ovary	Uterus	Brain
8964	381640	W92514	63.81	526.49	8.25	4.00	4.00	5	570.71	Eye	Pool	LID not found
8965	468054	AA053296	20.73	115.22	5.56	2.00	0.00	2	462.78	Uterus	Breast	Tonsil
8967	195547	R69225	157.87	1020.30	6.46	2.00	0.00	9	19.96			
8969	418435	W93024	90.21	570.88	6.33	2.00	0.00	X	137.28	Pool	Brain	LID not found
8982	782622	AA447553	7.87	40.61	5.16	1.00	0.00			Thyroid	Foreskin	Testis
8984	260035	N30372	24.74	146.03	5.90	1.00	0.00	7	591.02	Tonsil	Blood	Germ Cell
8988	342008	W60057	42.21	307.87	7.29	1.00	0.00	17	307.36	Esophagus	Synovial mem	Prostate
8988	882459	AA876404	10.36	74.61	7.20	2.00	0.00	5	491.07	Cervix	Ear	Uterus
8993	415085	W93382	11.55	67.99	5.89	1.00	0.00			Prostate	Pool	LID not found
8998	782840	AA448271	36.34	234.14	6.44	2.00	0.00			Testis	LID not found	Other
9000	145112	R77293	141.93	816.52	5.75	0.00	1.00	12	430.39	Epididymis	Liver	Stomach
9001	771301	AA443837	4.45	77.86	17.50	8.00	0.00			Ovary	Heart	Germ Cell
9003	156046	R72434	1.51	11.31	7.48	0.00	1.00	4	436.32	Gall bladder	Muscle	Breast
9006	795309	AA454160	4.85	93.46	19.26	2.00	0.00			Kidney	Testis	Lung
9012	230862	R95962	2.82	21.57	7.65	1.00	2.00	11	117.56	Eye	Brain	Testis
9013	468149	AA058711	4.88	32.59	6.68	1.00	0.00			Uterus	Colon	LID not found
9014	809503	AA454562	7.23	687.41	95.10	10.00	0.00	X	269.73	Neural	Stomach	Adrenal gland
9016	754406	AA436187	17.44	115.26	6.61	1.00	0.00					
9023	429211	AA007283	141.05	948.35	6.72	4.00	0.00			Kidney	Pool	LID not found
9024	377671	AA055979	3.87	78.47	20.26	1.00	0.00	12	242.45	Muscle	CNS	-
9025	755681	AA496539	5.07	392.62	77.40	7.00	0.00			Pooled	Ovary	Testis
9028	51842	H24308	1.63	8.58	5.25	1.00	0.00			CNS	Brain	LID not found
9029	293950	N64014	51.45	351.95	6.84	0.00	1.00	1	553.7	Skin	Uterus	Pancreas
9047	45587	H07934	16.31	81.63	5.00	1.00	0.00	5	-13.58	Larynx	Blood	Brain
9053	40871	R56251	6.26	41.91	6.70	0.00	1.00	12	45.2	Blood	-	Uterus
9054	46166	H09076	2.42	23.15	9.58	2.00	0.00	1	165.69	Small intestine	Skin	Pancreas
9059	51210	H19227	3.88	31.82	8.20	3.00	0.00	3	331.21	Pancreas	Foreskin	Brain
9060	49555	H15089	103.13	641.75	6.22	2.00	4.00	1	674.5	Pooled	Tonsil	Heart
9067	731308	AA418759	82.83	473.20	5.71	0.00	1.00	12	247.55	Neural	Breast	Eye
9070	769857	AA430367	26.28	280.51	10.67	1.00	1.00	21	266.24	Esophagus	Cervix	Liver
9071	45417	H08720	5.72	62.20	10.87	1.00	0.00	1	576.82			
9075	49410	H15685	80.75	718.01	8.89	1.00	3.00	11	127.97	Skin	Aorta	Pool

Table 2A

9081	745138	AA626698	602.66	5403.58	8.97	0.00	1.00					
9092	46108	H09325	34.91	308.50	8.84	4.00	4.00	7	413.5			
9093	487429	AA046525	3.24	17.76	5.49	1.00	0.00			Stomach	Bone	Breast
9096	46105	H09322	3.35	26.07	7.79	0.00	1.00	3	486.64	Brain	LID not found	Other
9102	68950	T54121	9.43	103.84	11.01	3.00	1.00	19	179.77	Placenta	Heart	Colon
9103	45629	H08730	3.50	49.89	14.27	2.00	0.00			-	Whole embryo	Placenta
9104	32339	R42823	1.74	9.65	5.56	0.00	1.00	8	515.79	Brain	LID not found	Other
9105	343867	W69954	14.12	113.52	8.04	1.00	0.00			Skin	Heart	Liver
9108	52642	H29590	14.90	157.02	10.54	3.00	3.00	5	482.73	Brain	Pool	LID not found
9109	725395	AA282074	54.84	276.03	5.03	1.00	0.00	11	269.09	Larynx	Eye	-
9110	624754	AA187148	6.56	37.76	5.75	1.00	0.00	16	400.44	Skin	Umbilical cord	Foreskin
9111	47597	H12081	3.02	23.77	7.87	0.00	1.00			Brain	LID not found	Other
9119	45649	H08568	21.59	266.89	12.36	2.00	5.00	7	414.93	Brain	LID not found	Other
9137	796806	AA461174	3.26	98.39	30.20	1.00	0.00	1	671.54	Pooled	Aorta	Pancreas
9140	345032	W72293	29.45	586.24	19.91	9.00	0.00	6	634.12	Ear	Foreskin	CNS
9149	83653	T61116	42.66	266.33	6.24	0.00	1.00	8	599.45	Spleen	Liver	Tonsil
9154	898044	AA598945	26.41	181.03	6.85	3.00	0.00			Uterus	Kidney	Ovary
9163	843195	AA488432	129.58	1692.17	13.06	3.00	0.00	7	262.43			
9167	40965	R56234	140.05	959.79	6.85	2.00	2.00	4	71.55	Kidney	Placenta	Brain
9171	842848	AA486281	9.47	52.15	5.50	0.00	1.00	18	393.85	Cervix	LID not found	Other
9172	67735	T49633	213.17	1591.09	7.46	2.00	2.00					
9183	841645	AA487488	12.17	906.98	74.51	22.00	1.00	17	48.77	Ovary	Umbilical cord	Colon
9184	67237	T52700	26.12	328.15	12.56	4.00	3.00	9	137.48	Umbilical cord	Breast	-
9189	34243	R44173	2.82	20.94	7.43	1.00	0.00	10	553.28	CNS	Brain	Testis
9192	73953	T55197	105.89	742.68	7.01	0.00	1.00	4	24.02			
9193	79960	T63520	93.70	492.06	5.25	0.00	1.00			Pancreas	Lung	Prostate
9196	34345	R44163	30.46	168.49	5.53	0.00	1.00	1	726.66	Brain	LID not found	Other
9200	73252	T56013	39.57	257.94	6.52	0.00	1.00					
9203	269945	N84617	22.25	146.60	6.59	1.00	1.00			Thymus	CNS	Nose
9205	32845	R43168	1.19	6.71	5.64	1.00	0.00	8	300.98	Brain	LID not found	Other
9216	25843	R37026	37.74	322.45	8.54	2.00	2.00	19	250.6	Parathyroid	Testis	-
9223	366887	AA029597	3.61	83.72	23.18	6.00	1.00	20	333.71	CNS	Kidney	Heart
9243	271483	N31808	0.81	6.92	8.54	1.00	0.00			Foreskin	-	Whole embryo
9248	272800	N35922	22.15	120.67	5.45	1.00	0.00	12	426.87	Foreskin	Pool	LID not found
9258	305877	N89973	11.77	93.57	7.95	2.00	0.00	5	355.85	Ear	Parathyroid	Bone
9260	251769	H97868	7.09	152.51	21.50	0.00	5.00	6	201.54	Foreskin	LID not found	Other
9267	810429	AA457108	22.19	193.03	8.70	1.00	0.00	11	255.2	Pooled	Spleen	Germ Cell
9275	299332	N75569	220.92	1408.06	6.37	2.00	0.00	8	515.7	Breast	Heart	Ovary
9276	241330	H91245	15.24	139.16	9.13	4.00	5.00	3	423.24			
9296	810987	AA485357	61.15	308.85	5.05	1.00	0.00	19	71.09	Ovary	Umbilical cord	Kidney
9300	782452	AA431435	6.36	69.50	10.93	0.00	1.00	1	629.85	Ear	Brain	Testis
9310	770954	AA429367	102.58	1037.80	10.12	2.00	0.00	1	674.22	Placenta	Cervix	Bone
9312	375827	AA039851	1.52	16.16	10.65	4.00	0.00			Stomach	Pooled	Muscle
9313	271165	N34494	99.26	864.61	8.71	1.00	0.00	13	123.92	Aorta	Foreskin	Whole embryo
9316	235104	H79319	57.34	320.54	5.59	2.00	0.00	21	180.34			
9322	323185	W42587	356.77	3968.32	11.12	2.00	0.00	2	101.44	Skin	Cervix	Bone
9338	844680	AA670107	7.04	203.64	28.94	3.00	0.00			Thymus	Heart	Lung
9340	243172	H94474	28.53	237.22	8.31	2.00	5.00	1	183.73			
9352	884425	AA629592	310.41	2311.00	7.45	0.00	1.00			Small intestine	Esophagus	Lymph node
9353	143535	R75639	57.31	301.14	5.25	1.00	0.00					
9360	377560	AA055946	7.01	38.60	5.51	1.00	0.00	11	389.93	Lymph	Synovial mem	-
9361	430233	AA010222	7.40	39.06	5.28	0.00	1.00	5	416.73	Placenta	Pool	LID not found
9364	346292	W74337	6.10	34.76	5.70	0.00	1.00	1	41.87	Ear	Pooled	CNS
9365	430092	AA009840	14.40	92.22	6.41	1.00	0.00	12	400.35			
9368	435330	AA699928	6.31	32.80	5.20	1.00	0.00					

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9369	252278	H87153	66.35	491.18	7.40	3.00	0.00	18	-13.12			
9374	770518	AA434187	42.92	263.01	6.13	1.00	0.00	7	424.26	Peripheral ner	Thymus	Head and neck
9375	375682	AA032221	21.05	124.44	5.91	0.00	1.00			Bone	Pooled	Blood
9376	525926	AA074511	19.03	118.33	6.22	1.00	0.00	2	71.28	Larynx	Esophagus	Placenta
9377	271926	N35250	414.27	3017.05	7.28	2.00	0.00	2	118.93	Muscle	Foreskin	Pool
9385	272658	N32261	280.66	1599.25	5.70	2.00	0.00	15	227.19			
9386	415089	W93379	18.03	96.16	5.33	1.00	0.00	1	695.02	Pooled	Testis	Brain
9389	340642	W56753	49.32	295.07	5.98	2.00	1.00	3	419.03	Tonsil	Heart	Brain
9391	502561	AA157017	48.04	288.22	6.00	1.00	0.00	1	58.78	Uterus	Brain	Pool
9393	201609	R98003	117.56	1009.81	8.59	2.00	2.00	17	452.42	Pool	LID not found	Other
9396	283013	N63768	0.58	10.04	17.18	1.00	0.00			Pool	LID not found	Other
9407	811142	AA485731	60.45	487.36	8.06	2.00	0.00			Spleen	-	Lung
9411	491727	AA150487	473.01	3242.42	6.85	1.00	1.00	2	720.63	Placenta	Aorta	Uterus
9414	153541	R48320	4.62	37.95	8.21	0.00	1.00	X	117.87	Breast	Brain	Testis
9415	34405	R44357	13.08	69.07	5.28	1.00	0.00			Colon	Parathyroid	Pool
9418	23903	R39528	5.54	29.93	5.40	1.00	0.00	7	675.52	Synovial mem	Stomach	Ear
9421	811046	AA485427	16.58	145.66	8.78	7.00	0.00	14	278.45	Esophagus	Adrenal gland	Ovary
9423	1034776	AA821535	11.79	60.40	5.12	1.00	0.00			Stomach	Spleen	Germ Cell
9424	40881	R56055	5.37	52.66	9.81	1.00	0.00	11	36.64	Brain	Prostate	Testis
9425	377692	AA056013	42.85	533.24	12.45	1.00	0.00	12	47.55	Breast	Heart	Blood
9436	73436	T55407	77.49	560.29	7.23	0.00	3.00			Umbilical cord	Spleen	Whole embryo
9439	47783	H11938	5.83	33.64	5.77	0.00	1.00	17	345.1	Neural	Brain	LID not found
9456	22786	R38635	43.37	256.70	5.86	0.00	2.00			Thymus	Eye	Colon
9457	854284	AA868726	4.70	28.77	5.70	1.00	0.00	12	238.8	Parathyroid	Lymph	Germ Cell
9460	73608	T55704	19.33	98.88	5.11	0.00	1.00			Skin	Spleen	Pooled
9461	344243	W89906	26.76	172.26	6.44	0.00	1.00	1	597.27	Smooth musc	Tonsil	Heart
9464	33026	R44496	4.97	51.68	10.39	0.00	1.00	11	66.8	Heart	Testis	Kidney
9470	1031076	AA810086	17.18	132.19	7.69	2.00	0.00			Blood	Colon	Whole embryo
9472	41643	R52682	30.49	303.67	9.96	3.00	5.00	5	504.31	Brain	LID not found	Other
9476	73241	T56007	1.61	10.24	6.37	1.00	0.00	X	276.32	CNS	Pooled	Spleen
9478	868332	AA634028	53.84	1075.17	19.97	9.00	0.00	6	117.99	Smooth musc	Nose	Esophagus
9480	23114	R38652	43.58	381.56	8.76	2.00	5.00	1	542.05	Brain	LID not found	Other
9483	241489	H90431	6.65	111.01	16.68	0.00	2.00	5	572.03	Pooled	Prostate	Breast
9487	33076	R44048	33.35	239.68	7.19	1.00	1.00	14	139.45			
9488	51395	H19415	24.31	422.45	17.38	5.00	5.00	5	454.26	Brain	LID not found	Other
9493	415086	W93370	7.09	82.56	11.64	3.00	3.00	12	58.23	Pool	LID not found	Other
9497	433481	AA699573	2.85	89.93	31.50	4.00	2.00					
9499	377252	AA055350	16.49	222.83	13.51	0.00	1.00	17	89.67	Colon	Heart	Brain
9501	261580	H98694	5.61	83.37	14.85	0.00	2.00	16	182.99	Parathyroid	Foreskin	Lung
9502	253009	H88540	311.21	4461.25	14.34	7.00	1.00	14	278.24			
9509	50018	H16761	67.14	525.84	6.03	2.00	1.00	9	355.78	Brain	LID not found	Other
9512	898076	AA598761	50.55	444.59	8.80	0.00	1.00	1	740.99		Adipose	Eye
9513	45645	H08753	181.35	1279.28	7.05	1.00	0.00	15	166.48	Synovial mem	Lymph	Pancreas
9514	511091	AA088258	58.55	858.15	15.14	3.00	0.00			Thyroid	Lymph	CNS
9515	32186	R42671	30.23	192.99	6.38	0.00	3.00			Brain	LID not found	Other
9531	71825	T52531	34.64	208.27	6.01	1.00	0.00			Spleen	Tonsil	Pool
9537	49944	H29215	50.41	276.75	5.49	0.00	1.00	2	694.44			
9538	276237	R94175	15.97	95.23	5.96	0.00	2.00	14	55.7	Stomach	Pancreas	Cervix
9539	50863	H16428	58.66	337.10	5.75	0.00	1.00	19	290.72	Tonsil	Whole embryo	Brain
9540	80699	T57648	9.37	50.30	5.37	1.00	0.00			Lung	LID not found	Other
9544	730633	AA412738	32.78	171.68	5.24	1.00	0.00	17	347.4	Small intestine		Ear
9552	897595	AA496887	9.31	61.69	6.63	1.00	0.00	20	192.65	CNS	Cervix	Germ Cell
9553	47186	H10403	5.85	40.69	6.96	0.00	1.00	9	32.97	Spleen	Whole embryo	Brain
9555	511096	AA088458	24.54	155.29	6.33	0.00	3.00	9	419.74	Bone	Colon	Prostate
9556	69360	T58648	134.08	1459.02	10.88	2.00	4.00			Placenta	LID not found	Other

Table 2A

9573	49631	H29257	196.31	1278.87	6.51	3.00	2.00			Whole embryo	Brain	Tonsil
9575	249755	H85476	88.89	455.14	5.12	1.00	0.00	12	105.23			
9576	530237	AA111979	19.99	101.13	5.06	1.00	0.00			Muscle	-	Pancreas
9579	428544	AA004868	38.91	211.86	5.44	0.00	2.00			Pool	LID not found	Other
9582	593537	AA165410	5.71	110.06	19.26	0.00	1.00	7	478.83	Spleen	Ovary	Whole embryo
9587	429333	AA007502	27.49	174.35	6.34	2.00	2.00			Pool	LID not found	Other
9591	587398	AA130351	129.23	779.20	6.03	2.00	0.00	16	362.75	Prostate	Colon	-
9597	46506	H09143	11.39	120.19	10.55	4.00	2.00	19	32.33	Brain	LID not found	Other
9598	346889	W79834	1.87	18.22	9.74	1.00	1.00			Lymph	Heart	LID not found
9599	416095	W85890	63.88	532.08	8.33	3.00	2.00			Pool	LID not found	Other
9607	204442	H58000	17.82	101.92	5.72	4.00	0.00	11	339.45	Aorta	Pool	LID not found
9608	248232	N58473	153.16	1000.45	6.53	3.00	0.00	10	359.28			
9612	283268	N45301	9.75	57.26	5.87	0.00	1.00			CNS	LID not found	Other
9615	428529	AA004846	3.43	17.42	5.09	1.00	0.00	1	674.22	Parathyroid	Pool	Prostate
9616	244305	N54793	4.23	23.65	5.59	1.00	0.00	18	57.88			
9630	359135	AA010128	10.84	75.58	6.97	0.00	1.00	2	90.09	Pooled	Bone	Colon
9646	489220	AA056734	4.36	32.29	7.41	2.00	0.00	12	-9.21	Pooled	Brain	Uterus
9651	364352	AA022496	4.13	35.98	8.70	1.00	0.00	12	474.54	Kidney	Parathyroid	Heart
9654	357298	W93688	10.22	61.46	6.02	1.00	0.00	11	274.11	Germ Cell	Prostate	Heart
9655	283919	N50797	27.04	162.73	6.02	2.00	0.00	6	104.03	Lymph node	Synovial mem	Cervix
9659	191858	H40351	1.36	8.01	5.89	1.00	0.00	3	198.24	Pool	LID not found	Other
9660	277747	N46086	4.19	96.43	23.02	2.00	0.00			CNS	Kidney	Pool
9668	279164	N46321	44.10	336.03	7.62	1.00	0.00			Ear	Umbilical cord	Tonsil
9672	247381	N58022	2.74	13.89	5.06	1.00	0.00			Uterus	Pool	Placenta
9682	124895	R06123	25.73	179.55	6.98	3.00	0.00	18	269.05	Prostate	Pool	LID not found
9688	294281	N64428	2.54	16.64	6.56	1.00	0.00	22	88.07	Pool	LID not found	Other
9690	126449	R06706	5.86	31.28	5.34	1.00	0.00			Bone	Pool	Breast
9691	782688	AA447593	25.28	162.18	6.42	1.00	0.00	1	115.45	Skin	Testis	Liver
9694	283995	N53378	8.86	44.55	5.03	1.00	0.00	15	19.85	CNS	Eye	Tonsil
9695	207828	H60560	6.24	37.40	6.00	2.00	0.00	5	467.02	Pool	LID not found	Other
9696	489169	AA056580	18.08	105.60	5.84	0.00	1.00			Skin	Pooled	CNS
9700	205239	H60824	4.17	27.32	6.56	3.00	0.00	10	46.94	Thyroid	Lymph	Heart
9701	303180	N92764	6.00	35.21	5.87	1.00	0.00			Muscle	Brain	Eye
9708	755301	AA496360	5.63	33.79	6.00	3.00	0.00	3	181.89	Lymph	Ovary	Breast
9711	292223	N62464	96.86	533.08	5.50	1.00	0.00	12	469.78	Foreskin	Tonsil	Blood
9712	22895	R38640	3.92	172.21	43.91	3.00	0.00	20	105.9	Brain	Lung	Pool
9714	427750	AA001897	2.61	14.52	5.57	1.00	0.00	1	568.94	Pool	Bone	LID not found
9715	120929	T96107	4.41	29.74	6.74	1.00	0.00			Brain	Pool	LID not found
9716	434833	AA703141	6.24	151.91	24.34	0.00	5.00					
9724	280970	N50854	21.51	144.48	6.72	1.00	2.00	12	40.67	Germ Cell	CNS	Tonsil
9728	296448	N74623	16.41	2386.92	145.45	3.00	0.00	11	16.42			
9733	359009	W92134	1.85	21.18	11.44	5.00	0.00	5	561.51	Head and nec	Esophagus	Skin
9737	795315	AA454172	96.40	574.13	5.96	2.00	0.00			Eye	Germ Cell	Pancreas
9750	795564	AA459674	5.70	28.83	5.06	1.00	0.00			Pooled	Thyroid	Testis
9753	428338	AA005153	5.39	48.88	9.07	7.00	0.00	1	165.59	Blood	Parathyroid	Pool
9758	795614	AA460006	1.08	9.91	9.34	1.00	0.00			Testis	Pool	LID not found
9759	212347	H88286	26.95	237.69	8.82	1.00	0.00	9	22.34	Pool	Testis	Brain
9761	428632	AA004528	43.79	246.10	5.62	2.00	0.00					
9767	243068	N39542	24.68	125.89	5.12	1.00	0.00			Lung	Pool	LID not found
9778	375857	AA037810	8.39	45.30	5.40	0.00	1.00	18	223.96	Head and nec	Cervix	Synovial membrane
9781	504431	AA151245	1.50	20.77	13.83	2.00	0.00			Lung	Uterus	Brain
9784	755599	AA419251	64.15	1420.22	22.14	7.00	0.00	11	18.88	Nose	Skin	Adipose
9787	810700	AA457688	25.28	141.61	5.60	2.00	0.00	11	228.96	Ovary	Brain	LID not found
9788	155768	R72097	1.88	32.64	17.33	5.00	0.00	11	227.81	Esophagus	Stomach	Breast
9789	795274	AA454012	4.28	24.40	5.70	1.00	0.00			Neural	-	Ovary

Table 2A

9790	810205	AA464518	3.45	61.13	17.72	1.00	0.00	8	404.08	Blood	Heart	Ovary
9792	289496	N83988	10.03	428.49	42.72	3.00	0.00	10	421.61	Smooth musc	Stomach	CNS
9804	51508	H16853	42.30	284.50	6.73	0.00	4.00			Brain	Pool	LID not found
9805	590774	AA157499	1.42	7.33	5.16	1.00	0.00			Parathyroid	Pancreas	Prostate
9809	773478	AA427891	19.92	106.31	5.34	1.00	0.00	3	726.84	Tonsil	Blood	Whole embryo
9813	270917	N32514	0.63	16.96	26.81	1.00	0.00	8	165.67	Synovial mem	Neural	Heart
9818	364934	AA025275	33.88	219.53	6.48	1.00	0.00	16	398.69	CNS	Placenta	Parathyroid
9820	51218	H16472	8.64	49.69	5.75	0.00	1.00	10	363.47	Marrow	Ovary	Pooled
9824	47378	H11036	13.72	97.07	7.07	1.00	2.00	8	434.49	Brain	Whole embryo	Kidney
9828	33837	R45939	12.69	101.37	7.99	2.00	0.00	4	439.11		Adrenal gland	Lung
9830	713974	AA284954	12.28	62.28	5.07	1.00	0.00	5	578.76			
9831	52577	H29566	161.57	1246.09	7.71	3.00	5.00	9	358.01			
9832	32150	R43352	5.81	56.99	9.80	0.00	2.00	11	131.57	CNS	Brain	Pool
9837	781047	AA446462	26.06	135.05	5.18	0.00	1.00			Adrenal gland	Testis	Germ Cell
9844	22600	T87235	1.33	14.61	10.98	2.00	0.00	12	80.95	Brain	LID not found	Other
9847	52730	H29500	3.23	21.10	6.54	0.00	1.00	3	472.27	Brain	Blood	Prostate
9849	868630	AA664389	256.71	1368.46	5.33	1.00	0.00	13	131.31	Stomach	Head and nec	Ear
9855	50250	H17600	5.59	32.93	5.89	2.00	0.00			Stomach	Brain	LID not found
9856	51606	H18936	2.37	30.59	12.90	2.00	2.00	3	697.57	Brain	LID not found	Other
9860	34560	R44193	2.61	19.31	7.39	1.00	0.00	13	155.48	Pancreas	Lung	Brain
9861	303109	N90783	12.95	96.96	7.49	1.00	0.00	13	147.98	Whole embryo	Pancreas	CNS
9862	433155	AA680136	4.11	29.01	7.06	1.00	0.00	1	611.54	Gall bladder	Pool	Placenta
9864	32496	R43486	4.01	28.80	7.17	2.00	0.00			Testis	Pool	Brain
9865	287745	N62244	21.29	162.81	7.65	2.00	0.00	1	740.99	Esophagus	Adrenal gland	Aorta
9870	432651	AA700556	25.79	140.68	5.45	0.00	1.00					
9871	50132	H17055	2.68	15.79	5.90	1.00	0.00	13	204.51	Brain	LID not found	Other
9872	49554	H15087	4.37	23.62	5.40	1.00	0.00	2	97.87	Brain	Pool	LID not found
9875	51774	H23212	14.91	115.07	7.72	2.00	0.00	5	-9.1	Foreskin	Brain	Whole embryo
9876	24915	R39066	3.48	24.72	7.10	1.00	0.00			Pool	Brain	LID not found
9881	241736	H91691	35.14	224.01	6.37	0.00	1.00	12	244.17	Skin	Cervix	Germ Cell
9884	72003	T52330	1.99	14.07	7.07	3.00	0.00	1	538.57	Eye	CNS	Lymph
9885	586725	AA129171	9.62	48.18	5.01	1.00	0.00	11	236.57	Brain	-	Germ Cell
9888	40649	R56397	1.75	10.41	5.93	1.00	0.00	18	329.18	Brain	LID not found	Other
9892	33510	R43898	2.58	16.23	6.28	2.00	0.00	7	485.65	Neural	Foreskin	Brain
9895	951125	AA620556	115.42	950.64	8.24	0.00	1.00	6	21.28	Umbilical cord	Muscle	Uterus
9904	83158	T68113	243.52	1425.87	5.86	0.00	3.00			Liver	Uterus	LID not found
9909	45500	H08203	1.68	49.69	26.79	0.00	1.00	11	97.53	CNS	Brain	LID not found
9913	23586	R38369	8.07	73.87	9.16	1.00	3.00	2	675.88	Germ Cell	Lung	-
9921	31818	R41730	24.68	136.75	5.54	1.00	0.00	2	226.05	Brain	Whole embryo	Lung
9923	743224	AA400229	13.12	71.96	5.48	1.00	0.00	5	654.42	Smooth musc	Testis	Tonsil
9925	47234	H10939	2.22	47.37	21.35	5.00	1.00	5	584.16	Larynx	Brain	Parathyroid
9929	796078	AA460353	0.84	9.76	11.68	1.00	0.00	9	383.2	Neural	Synovial mem	Blood
9955	950588	AA608567	202.83	1140.65	5.62	1.00	0.00			Lymph node	Foreskin	Bone
9956	26259	R20547	4.57	55.33	12.10	2.00	0.00			Brain	LID not found	Other
9957	51496	H18927	2.25	18.68	8.31	2.00	0.00			CNS	Brain	Aorta
9958	346671	W74646	5.54	30.82	5.56	1.00	0.00	16	194.85	Lymph node	Synovial membrane	
9960	25384	R12808	50.97	391.93	7.69	3.00	0.00					
9966	282720	N50079	55.00	298.40	5.43	0.00	1.00	13	120.56	Thymus	Ear	Adrenal gland
9970	841226	AA487115	46.62	270.05	5.79	1.00	0.00	1	639.63	Adipose	CNS	Muscle
9973	46561	H09757	13.82	197.65	14.30	1.00	0.00	8	91.28	Foreskin	Whole embryo	Germ Cell
9974	949988	AA600214	179.13	1782.73	9.95	1.00	0.00	8	442.4	Synovial mem	Skin	Cervix
9980	32683	R43543	3.31	22.66	6.85	0.00	1.00			Whole embryo	Brain	LID not found
9981	50879	H18424	6.40	52.52	8.21	0.00	1.00	17	332.34	Skin	Brain	Whole embryo
9988	795446	AA453616	1.45	28.38	19.61	5.00	0.00	5	39.72	Germ Cell	Testis	Eye
9991	284100	N53421	6.62	112.86	17.06	1.00	2.00	18	-10.98	Smooth musc	CNS	Placenta

Table 2A

9996	320201	W15542	105.30	672.71	6.39	2.00	0.00	1	98.48	Parathyroid	Eye	Prostate
10003	810454	AA457119	39.05	293.61	7.52	4.00	0.00	21	217.43	Larynx	Cervix	Skin
10014	124229	R02329	5.72	54.41	9.52	2.00	0.00			Pool	LID not found	Other
10019	303049	N91589	4.53	26.38	5.82	1.00	0.00	16	22.69	Colon	Breast	Lung
10020	270277	N33555	47.06	279.16	5.93	1.00	0.00	3	141.89	Foreskin	LID not found	Other
10022	415806	W84774	3.40	17.48	5.15	1.00	0.00	X	287.63	Pool	Colon	LID not found
10027	503725	AA131530	160.27	1134.59	7.08	2.00	0.00	X	296.2	CNS	Bone	Breast
10030	120678	T95650	51.78	449.02	8.67	2.00	2.00	3	198.24	Breast	Brain	Pool
10034	306216	N92404	13.53	114.47	8.46	3.00	3.00	4	420.51	Whole embryo	Pool	Heart
10038	429299	AA007370	9.85	97.80	9.93	1.00	0.00	19	218.02	Stomach	CNS	Heart
10042	113193	T83864	49.05	282.64	5.77	2.00	2.00					
10047	277714	N49577	2.25	14.52	6.46	1.00	0.00			CNS	Placenta	Pool
10048	343387	W87292	4.07	23.21	5.71	1.00	0.00	4	579.1	Colon	Heart	Uterus
10052	321900	W37447	16.58	141.89	8.56	3.00	0.00	8	404	Bone	Foreskin	Parathyroid
10058	429108	AA004796	4.59	27.01	5.89	1.00	0.00	10	126.87	Pool	LID not found	Other
10060	272677	N36172	5.59	38.72	6.92	1.00	0.00	10	45.1	Foreskin	Testis	Pool
10064	286250	N26714	20.94	122.51	5.85	1.00	0.00			Foreskin	Colon	Pool
10076	120924	T95909	141.55	1082.71	7.65	3.00	0.00	22	119.23			
10081	327337	W02102	39.91	230.36	5.77	0.00	1.00	1	576.51	Ear	Prostate	Heart
10084	345743	W72666	20.15	178.23	8.85	5.00	0.00	21	154.34	Neural	Brain	Eye
10089	261163	H98201	286.70	1632.70	5.69	1.00	0.00	3	164.31	Adipose	Foreskin	Kidney
10095	377363	AA055052	2.55	19.63	7.71	2.00	0.00			Prostate	Colon	Heart
10096	856796	AA569545	20.31	122.45	6.03	1.00	0.00	20	270.8	Epididymis	Neural	Pancreas
10099	277042	N39572	4.73	47.81	10.10	4.00	0.00	14	14.91	CNS	Foreskin	Whole embryo
10105	273652	N36994	108.66	652.50	6.00	1.00	2.00			Foreskin	LID not found	Other
10112	364510	AA022561	38.68	348.61	9.51	0.00	5.00	3	69.98	Thymus	Eye	CNS
10113	291417	N72307	213.91	1366.82	6.39	2.00	0.00	8	116.81	Foreskin	Brain	Eye
10115	288748	N62487	9.73	95.69	9.83	1.00	0.00			CNS	Eye	Breast
10117	342208	W63785	33.89	204.61	6.04	0.00	3.00			-	Heart	LID not found
10120	433350	AA700604	34.17	200.17	5.86	1.00	1.00					
10124	257248	N26906	8.42	92.76	11.01	1.00	1.00	2	120.34			
10128	139840	R62364	3.38	27.21	8.05	1.00	0.00	16	354.33	Placenta	Pool	LID not found
10129	280387	N49276	11.39	75.96	6.67	0.00	4.00	5	299.68	CNS	LID not found	Other
10136	177967	H46254	4.23	21.50	5.08	1.00	0.00	3	52.66	Brain	LID not found	Other
10139	279091	N46240	31.92	166.49	5.22	0.00	1.00	7	264.9	Skin	Liver	Breast
10140	416539	W86423	102.91	639.40	6.21	2.00	0.00			Ear	Liver	Pool
10143	504623	AA149226	14.33	95.93	6.70	1.00	0.00			Tonsil	Breast	Germ Cell
10144	53092	R15785	45.48	390.24	8.58	0.00	1.00	2	140.92	Foreskin	Aorta	Umbilical cord
10149	365575	AA009484	1.29	23.42	18.22	3.00	0.00			Heart	LID not found	Other
10157	376080	AA040387	6.21	39.11	6.29	1.00	0.00			Heart	Kidney	Pancreas
10162	272327	N32199	180.45	1854.38	10.28	2.00	0.00			Foreskin	Eye	Heart
10165	345051	W72803	13.67	84.70	6.20	0.00	1.00	1	210.4	Heart	Aorta	Whole embryo
10166	503096	AA151480	9.10	48.85	5.37	1.00	0.00	19	250.87	Uterus	Bone	Whole embryo
10167	809674	AA454689	79.24	704.02	8.89	3.00	0.00			Ovary	Lung	Brain
10173	377168	AA055163	4.11	21.86	5.32	1.00	0.00			Heart	Whole embryo	Lung
10174	758298	AA404337	8.66	43.97	5.08	1.00	0.00	8	323.97	Ear	Tonsil	Brain
10177	531957	AA113881	10.03	58.80	5.86	1.00	0.00	17	41.12	Neural	Umbilical cord	Muscle
10181	121551	T97710	3.90	71.56	18.34	7.00	1.00			Pancreas	Colon	Kidney
10191	32632	R43088	6.27	47.33	7.55	0.00	3.00	6	102			
10192	41793	R59200	3.00	32.46	10.81	1.00	0.00	2	576.38	Aorta	Brain	LID not found
10195	363055	AA019320	6.52	36.12	5.54	0.00	1.00			Kidney	Pool	Brain
10196	80692	T57834	158.02	1113.27	7.14	1.00	3.00			Umbilical cord	Spleen	Foreskin
10199	46196	H09243	382.68	1970.93	5.15	0.00	1.00	6	650.09	Brain	LID not found	Other
10204	74713	T57349	11.63	106.99	9.20	1.00	0.00	3	684.31	CNS	Spleen	Tonsil
10205	152453	R46202	22.18	149.69	6.75	0.00	2.00			Breast	Eye	Lung

Table 2A

10207	73222	T57221	53.18	332.42	6.25	1.00	3.00	8	542.11	Spleen	Pool	LID not found
10210	120600	T95113	8.28	230.57	27.84	2.00	0.00	2	31.43	Uterus	Lymph	-
10216	32925	R43646	2.42	19.79	8.17	1.00	0.00	1	335.43	CNS	Brain	LID not found
10223	742635	AA400262	38.08	352.82	9.27	2.00	3.00			Testis	Colon	LID not found
10224	23218	R38089	3.59	21.50	5.98	2.00	0.00	4	443.96	Brain	Pool	LID not found
10225	428448	AA007899	21.09	112.40	5.33	1.00	0.00	1	621.98	Adipose	Pool	-
10232	46360	H09769	29.89	318.81	10.67	5.00	5.00	6	613.3	Thyroid	Brain	LID not found
10235	866304	AA634006	546.62	4715.07	8.63	1.00	0.00	10	421.71	Aorta	Small intestine	Bone
10240	41405	R56148	2.57	19.30	7.52	3.00	0.00	8	413.37	Brain	LID not found	Other
10246	505491	AA156461	62.10	325.37	5.24	0.00	1.00	21	245.27	Ignore	Small intestine	Neural
10248	23554	R38274	4.76	28.74	6.25	0.00	1.00	2	87.96	Tonsil	Eye	CNS
10253	121406	T96688	2.15	11.44	5.31	1.00	0.00	21	266.59	Ignore	Lymph	-
10261	884718	AA629558	64.78	737.72	11.39	0.00	1.00	4	24.02	Lymph	Colon	Aorta
10262	135085	R33031	293.58	2277.83	7.76	2.00	2.00	15	309.17	Thyroid	Adrenal gland	Colon
10264	46949	H10079	5.56	43.90	7.90	0.00	1.00	8	438.11	Brain	Eye	Breast
10266	432042	AA078280	30.63	217.12	7.04	0.00	1.00	5	388.23	CNS	Ear	Foreskin
10268	79240	T58129	7.85	57.09	7.46	3.00	0.00			Ear	Uterus	Lung
10269	306575	N94820	83.72	505.47	6.04	1.00	2.00	1	51.33	Heart	Lung	Uterus
10272	23728	R39555	50.72	596.34	11.76	0.00	2.00	3	599.41	Naural	Placenta	Colon
10275	376358	AA041300	9.85	51.42	5.33	0.00	1.00	11	43.25	Heart	LID not found	Other
10278	40352	R54797	47.70	556.85	11.67	1.00	4.00	2	473.05	Brain	LID not found	Other
10282	742036	AA402812	11.87	59.91	5.05	0.00	1.00	10	274.1	Ovary	Cervix	Adrenal gland
10288	509943	AA052960	36.44	281.87	7.73	2.00	1.00	X	354.25	Aorta	Cervix	Stomach
10291	511806	AA088430	161.99	1094.79	6.76	0.00	2.00			Adrenal gland	Colon	LID not found
10293	46436	H09664	29.38	226.19	7.70	1.00	4.00	3	122.42	Nose	Heart	Brain
10294	32483	R43456	6.48	32.69	5.04	1.00	0.00			Brain	LID not found	Other
10297	40150	R53980	48.00	620.10	12.92	5.00	5.00	10	143.76	Kidney	Testis	Brain
10302	22845	R43678	4.27	84.15	19.68	1.00	0.00	X	283.1	Brain	LID not found	Other
10309	46236	H10661	80.09	645.84	8.06	6.00	4.00	3	139.88	CNS	Aorta	-
10312	950676	AA608555	5.84	69.52	12.32	3.00	0.00			Brain	Testis	Whole embryo
10314	627251	AA191488	266.88	1984.87	7.44	0.00	2.00			Small intestine	Cervix	Adrenal gland
10315	795084	AA460366	28.77	228.15	7.93	0.00	4.00	20	248.29	Whole embryo	LID not found	Other
10316	23063	R45264	3.98	25.56	6.43	1.00	1.00	5	281.57	Tonsil	Brain	Pool
10317	47059	H11016	61.65	402.97	6.54	4.00	2.00	6	384.33	Pancreas	Parathyroid	Foreskin
10319	840576	AA487896	10.42	54.16	5.20	0.00	1.00	8	436.1	Testis	Lung	Prostate
10321	40038	R53446	3.63	119.59	32.94	6.00	4.00	5	39.19	Brain	LID not found	Other
10323	839579	AA489813	32.82	328.45	10.01	3.00	0.00	11	245.98	Eye	LID not found	Other
10324	41595	R59556	4.57	33.88	7.41	3.00	0.00	16	45.27	CNS	Blood	-
10326	429936	AA034059	66.53	343.88	5.02	1.00	0.00	9	308.54	Pool	LID not found	Other
10327	321751	W35416	208.05	1389.36	6.68	1.00	2.00			Parathyroid	LID not found	Other
10329	41391	R56123	4.33	62.27	14.40	4.00	0.00			Aorta	Pooled	Breast
10340	23822	R39546	3.60	23.55	6.55	1.00	0.00			Brain	LID not found	Other
10342	345262	W72881	4.07	32.38	7.96	3.00	0.00					
10344	76647	T50995	1.24	7.97	6.41	1.00	0.00			Nose	Ovary	LID not found
10347	839870	AA489847	3.64	20.93	5.75	0.00	1.00	6	64.68	Germ Cell	Foreskin	Eye
10348	23800	R38381	5.40	54.60	10.11	5.00	5.00	19	185.89	Brain	LID not found	Other
10351	781461	AA429573	14.71	89.26	6.07	0.00	3.00			Testis	Whole embryo	Pool
10355	809600	AA458473	30.61	237.42	7.76	0.00	2.00	21	217.43	Cervix	Ovary	Parathyroid
10356	32092	R42695	1.51	13.64	9.05	2.00	1.00	5	511.07	CNS	Colon	Brain
10361	41825	R54109	0.95	22.97	24.09	5.00	2.00	10	253.65	Brain	LID not found	Other
10362	131626	R23735	1.32	9.29	7.05	0.00	1.00			Synovial mem	Placenta	Foreskin
10363	839807	AA489768	199.76	1642.03	8.22	2.00	2.00	9	309.06	Eye	LID not found	Other
10364	24237	R38018	2.36	23.90	10.13	3.00	2.00	10	354.11	Brain	LID not found	Other
10366	322652	W15487	146.26	1014.81	6.84	1.00	0.00			Parathyroid	Breast	Placenta
10367	809657	AA454682	134.69	1268.39	9.42	1.00	0.00			Foreskin	-	Ear

Table 2A

10368	842879	AA486410	117.10	993.99	8.49	2.00	2.00	6	95.99	Cervix	Parathyroid	Bone
10370	126513	R06748	34.79	341.73	9.82	4.00	4.00			Lymph	Kidney	Pool
10374	782851	AA448285	26.21	230.85	8.81	3.00	0.00			Head and nec	Aorta	Cervix
10395	197374	R87122	48.08	235.75	5.12	1.00	0.00	15	252.02	Muscle	Heart	Stomach
10418	126739	R07128	11.78	117.38	9.98	2.00	0.00	18	62.25	Pool	LID not found	Other
10427	195801	R89104	73.91	449.48	6.08	2.00	0.00					
10435	194669	R89828	5.58	41.33	7.40	3.00	0.00			Pool	LID not found	Other
10438	130078	R21408	4.33	30.97	7.15	2.00	0.00	1	629.23	Pooled	Placenta	Uterus
10444	360155	AA013260	0.68	4.65	6.88	1.00	0.00			Foreskin	Gall bladder	Eye
10446	360065	AA053815	6.16	37.03	6.01	1.00	0.00			CNS	Heart	Testis
10448	290182	N62213	2.84	15.02	5.30	1.00	0.00			CNS	Testis	LID not found
10450	505506	AA146969	11.25	70.67	6.28	1.00	0.00			Uterus	Pool	LID not found
10459	418323	W90764	29.44	202.03	6.86	1.00	0.00	3	730.79			
10460	289287	N73705	19.56	98.66	5.04	1.00	0.00	2	194	Thyroid	Adrenal gland	Lymph
10462	795378	AA453495	13.74	208.51	15.17	4.00	0.00			Germ Cell	Placenta	Foreskin
10465	428492	AA005428	14.87	78.31	5.27	1.00	0.00	12	316.62	Pool	LID not found	Other
10467	234623	H77729	7.08	37.61	5.31	1.00	0.00	16	22.79	Blood	Pooled	Eye
10468	811015	AA485377	8.43	82.30	9.77	2.00	0.00	14	199.9	Aorta	Nose	Thymus
10471	301617	N91165	1165.06	10375.29	8.91	2.00	0.00			Liver	Lung	Pool
10472	742132	AA406020	21.64	246.82	11.40	8.00	0.00	8	440.23	Esophagus	Cervix	Germ Cell
10474	376482	AA039512	117.36	633.85	5.40	1.00	0.00			Thyroid	Blood	Tonsil
10476	39920	R53935	31.54	305.80	9.69	3.00	0.00			Pool	LID not found	Other
10480	287687	N59150	116.00	862.27	7.43	1.00	0.00	21	152.58	Bone	CNS	Whole embryo
10488	588915	AA157813	237.64	1553.70	6.54	4.00	0.00			Esophagus	Head and nec	Nose
10493	366041	AA074596	19.71	133.85	6.79	0.00	1.00			Head and nec	Adrenal gland	Pooled
10496	755578	AA419177	60.74	678.41	11.17	0.00	1.00	16	484.46	Cervix	Lymph	Foreskin
10501	810089	AA464983	17.49	309.86	17.71	7.00	0.00	8	561.65	Breast	Cervix	Ovary
10504	415899	W86199	20.79	143.51	6.90	0.00	1.00			Blood	Eye	Whole embryo
10511	418328	W90760	34.54	192.82	5.58	0.00	2.00	4	467.5	Pool	LID not found	Other
10512	344134	W73790	10.76	55.44	5.15	1.00	0.00	22	63.7			
10517	810230	AA464694	11.15	72.95	6.54	2.00	0.00			Adipose	Ovary	Prostate
10522	785561	AA459681	15.19	81.51	5.36	1.00	0.00			Blood	Aorta	CNS
10525	415715	W84867	3.57	17.87	5.01	1.00	0.00	2	103.51	Brain	Pool	LID not found
10530	502917	AA135868	83.53	724.53	8.67	2.00	0.00	8	299.56	CNS	Uterus	Lung
10531	491644	AA150263	6.83	38.81	5.69	0.00	1.00	4	444.77	Stomach	Pooled	Uterus
10533	489805	AA102068	2.28	37.27	16.35	2.00	0.00			Parathyroid	Colon	Uterus
10537	376043	AA040265	2.32	33.75	14.52	1.00	0.00			Heart	Whole embryo	Prostate
10542	321492	W32511	32.32	196.83	6.09	0.00	1.00	10	403.27	Adrenal gland	Bone	Ear
10543	229949	H70887	3.13	50.86	16.25	1.00	0.00	5	-10.43			
10545	430291	AA010600	3.68	31.42	8.54	3.00	0.00			Ovary	Testis	Pool
10549	810960	AA459401	8.17	560.56	68.60	13.00	1.00	19	274.87	Larynx	Ovary	Pancreas
10550	489208	AA045658	15.91	117.88	7.41	0.00	1.00	16	44.66			
10553	198311	R94491	26.39	167.78	6.36	2.00	1.00	11	183.74	Pool	LID not found	Other
10554	504826	AA150777	13.30	77.50	5.83	0.00	1.00	10	335.81	Whole embryo	Pooled	Umbilical cord
10557	782737	AA448003	2.98	15.25	5.11	1.00	0.00			Aorta	Muscle	Germ Cell
10558	429060	AA005140	9.20	55.32	6.01	1.00	0.00	19	250.4	Pooled	Spleen	Brain
10559	296488	N70208	3.43	450.59	131.56	22.00	1.00			Foreskin	CNS	Pool
10562	884655	AA629909	138.10	1256.57	9.10	0.00	1.00	7	137.5	Cervix		Pancreas
10565	531319	AA071486	12.10	147.97	12.23	0.00	1.00	17	48.48	Thymus	Pooled	Germ Cell
10567	40873	R56044	8.18	60.13	7.35	1.00	0.00	20	208.92	Brain	LID not found	Other
10571	46898	H09818	7.81	54.10	6.93	1.00	2.00	5	591.55			
10573	744047	AA629262	19.22	114.79	5.97	0.00	1.00			Umbilical cord	Germ Cell	Bone
10575	46173	H09099	15.28	1683.19	110.14	11.00	1.00	11	57.07	CNS	Adrenal gland	Placenta
10576	33408	R44082	87.32	604.24	6.92	0.00	2.00	2	410.75	Brain	LID not found	Other
10583	47151	H10995	9.11	180.45	20.91	4.00	3.00	15	257.33	Brain	LID not found	Other

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10584	46829	H10047	15.09	136.25	9.03	2.00	3.00	7	126.26	Brain	LID not found	Other
10587	45877	H08582	6.76	62.58	9.26	1.00	0.00	7	323.97	Brain	Kidney	Lung
10598	46367	H09959	6.28	39.97	6.37	1.00	1.00	11	259.81	Brain	Pool	LID not found
10603	46266	H09078	5.33	28.84	5.41	1.00	0.00	7	141.38	CNS	Brain	Uterus
10613	430968	AA678335	6.00	234.02	39.01	1.00	0.00			Pool	Testis	Prostate
10614	472008	AA036881	6.82	151.10	22.17	0.00	1.00	3	143.12	Lung	Lymph	Uterus
10616	50587	H17620	70.18	627.73	8.94	4.00	5.00	2	466.05	Brain	Testis	LID not found
10620	51991	H23229	74.03	710.43	9.60	3.00	0.00			Ovary	Blood	Prostate
10622	223350	H86554	3.16	372.02	117.56	21.00	2.00	8	426.08	Gall bladder	Liver	Ovary
10623	46273	H09082	8.47	66.85	7.90	2.00	1.00	1	130.67	-	CNS	Germ Cell
10626	878838	AA670430	15.43	112.35	7.28	1.00	0.00	7	468.83	Aorta	CNS	Brain
10627	47789	H11728	2.73	20.43	7.47	2.00	0.00	21	229.15	Pancreas	Bone	Colon
10629	461727	AA682293	6.34	38.68	6.10	1.00	0.00			Gall bladder	Liver	Kidney
10632	49227	H15408	6.73	65.74	9.76	2.00	0.00	14	21.36	Foreskin	Brain	Whole embryo
10635	26505	R20639	4.32	23.78	5.51	0.00	1.00	2	97.77	Brain	Pooled	CNS
10637	755612	AA419229	11.98	188.01	15.69	8.00	0.00	2	471.33	Adrenal gland	Ovary	Brain
10639	50004	H16733	2.07	18.33	8.83	1.00	0.00	3	91.11	Spleen	Brain	LID not found
10640	33715	R44078	17.44	119.79	6.87	0.00	2.00	7	601.67	Neural	Marrow	Pooled
10641	884783	AA629603	0.73	70.39	96.44	1.00	0.00	1	266.7	Gall bladder	Spleen	Muscle
10642	49987	H28734	2.00	79.04	39.51	7.00	0.00			Brain	Germ Cell	Eye
10644	25838	R37108	24.83	385.27	15.52	4.00	5.00	20	194.06	Brain	Foreskin	Lung
10648	739193	AA421218	5.15	100.31	19.49	8.00	0.00	15	258.04	Synovial mem	Eye	Bone
10651	41720	R54105	1.06	7.37	6.97	1.00	1.00	2	97.77	Brain	Pooled	CNS
10652	25520	R37696	16.19	195.37	12.07	7.00	5.00	19	278.4	Whole embryo	Brain	LID not found
10653	214985	H72030	11.55	132.27	11.45	0.00	1.00	17	340.31	Neural	Parathyroid	Stomach
10660	34468	R44214	82.53	428.97	5.20	2.00	0.00	13	32.28	Uterus	Brain	Pool
10665	51907	H23529	70.24	819.70	11.67	1.00	5.00	19	214.41			
10677	46411	H09164	6.69	40.85	6.11	2.00	0.00	13	278.42	Brain	Parathyroid	Kidney
10688	267468	N69091	9.73	87.74	9.02	0.00	1.00	13	162.94	Ear	Breast	Testis
10711	595109	AA173926	22.05	158.85	7.20	0.00	1.00	11	276.85	Foreskin	Prostate	Blood
10716	51604	H18934	4.03	38.90	9.89	3.00	0.00	16	24.9	Lymph	Placenta	Colon
10718	950428	AA599085	19.84	103.13	5.20	0.00	1.00	12	188.25	CNS	Adrenal gland	Testis
10721	841094	AA486780	2.44	25.74	10.55	1.00	0.00	12	56.88	Gall bladder	Placenta	Parathyroid
10735	279308	N46354	3.76	20.36	5.37	1.00	0.00	4	227.31	CNS	LID not found	Other
10737	773639	AA431687	15.00	133.33	8.89	2.00	0.00	14	282.8	Head and nec	Cervix	Muscle
10740	51433	H20747	2.50	41.19	16.48	1.00	0.00			Prostate	Brain	LID not found
10741	51988	H23225	4.36	47.76	10.96	0.00	3.00	17	53.59			
10744	66747	T64919	24.18	208.97	8.64	2.00	4.00					
10746	595197	AA164847	5.22	82.18	15.76	6.00	0.00	21	229.15	Ovary	Pool	Brain
10747	190915	H39221	8.90	48.34	5.43	1.00	0.00			Eye	Tonsil	Testis
10751	897592	AA486878	68.44	347.96	5.08	1.00	0.00	17	307.17	Larynx	Synovial mem	Heart
10756	257096	N30792	81.64	567.57	6.95	2.00	0.00			Thyroid	Breast	Testis
10763	417976	W90660	10.93	79.73	7.29	0.00	1.00	22	109.9	Spleen	CNS	Heart
10764	259072	N29356	2.96	17.38	5.87	1.00	0.00	10	438.17	Pool	LID not found	Other
10766	305253	N95011	22.71	235.73	10.38	2.00	0.00	10	529.52	Nose	Muscle	Kidney
10767	309081	N92895	4.10	36.47	8.89	1.00	0.00	7	57.93	Neural	Adipose	Prostate
10772	258026	N30308	4.39	117.55	26.75	1.00	0.00	3	141.87	Ear	Germ Cell	Pool
10778	428652	AA004321	34.20	289.72	8.47	3.00	3.00			Pool	LID not found	Other
10782	121028	T96309	5.96	57.72	9.68	3.00	3.00	16	167.66	Prostate	Pool	LID not found
10798	429196	AA005355	9.62	60.93	6.33	1.00	3.00					
10799	491186	AA137073	5.09	39.49	7.76	1.00	0.00	13	284.58	Aorta	-	Uterus
10802	428697	AA004353	36.44	211.40	5.80	0.00	1.00			Pool	LID not found	Other
10808	271471	N35025	114.02	607.20	5.33	1.00	0.00	19	112.48	Foreskin	LID not found	Other
10814	418081	W90067	4.60	26.13	5.68	1.00	0.00	14	123.72	Pool	Heart	LID not found
10816	260022	N32623	7.60	40.24	5.29	1.00	0.00	2	592.27	Pool	LID not found	Other

Table 2A

10819	810937	AA459389	1.72	27.95	16.26	3.00	0.00	22	74.71	Ignore	Germ Cell	Bone
10820	291690	N67832	4.10	27.99	6.83	1.00	0.00	16	499.89	Foreskin	Colon	-
10826	109952	T88816	10.50	58.48	5.38	0.00	1.00			Pool	LID not found	Other
10828	491367	AA148524	111.69	637.65	5.70	0.00	1.00			Heart	Uterus	Pool
10840	258666	N30069	3.43	34.18	9.96	0.00	1.00	9	383.51	Thyroid	Germ Cell	Lymph
10842	194515	R86242	8.82	56.94	6.46	2.00	0.00	2	387.37	Stomach	Kidney	Parathyroid
10848	345838	W72692	142.07	1010.76	7.11	5.00	0.00			Heart	Pool	LID not found
10852	241996	H92985	10.44	63.17	6.05	0.00	2.00					
10855	134942	R32334	7.00	49.81	7.12	5.00	0.00	11	253.29	CNS	Stomach	Parathyroid
10856	196543	R91570	3.53	317.54	89.86	3.00	0.00	2	603.72	Lymph	Breast	Pool
10860	242001	H92974	31.79	399.27	12.56	5.00	5.00	9	-10.76	Ovary	Pool	LID not found
10867	283190	N51357	2.79	46.17	16.58	1.00	0.00			Larynx	CNS	Eye
10868	241946	H93050	15.74	95.38	6.06	0.00	1.00	15	135.17			
10875	244796	N52554	257.16	2560.65	9.96	2.00	0.00	7	481.98	Parathyroid	CNS	Prostate
10876	429505	AA011383	12.30	96.29	7.83	2.00	3.00	6	99.75			
10889	307687	N92924	5.32	31.80	5.98	0.00	1.00	6	111.13	Thymus	Germ Cell	Parathyroid
10890	272690	N36174	4.18	58.65	14.04	0.00	1.00	2	709.74	Foreskin	-	Kidney
10895	782838	AA448270	4.31	37.41	8.68	1.00	0.00			Bone	Testis	Colon
10897	304686	N92502	16.99	132.95	7.83	2.00	0.00			Parathyroid	Foreskin	Germ Cell
10899	279999	N37577	83.84	545.96	6.51	4.00	0.00			Lymph node	Smooth musc	Stomach
10903	770681	AA476285	5.30	39.13	7.38	5.00	0.00	12	42.89	Esophagus	Spleen	Parathyroid
10904	236155	H61758	4.09	40.08	9.81	1.00	1.00	1	682.97	Thyroid	Spleen	Prostate
10905	320455	W04713	42.55	280.02	6.58	0.00	1.00	7	94.62			
10908	267458	N25240	28.20	224.85	7.97	0.00	1.00	1	554.22	Skin	Foreskin	Germ Cell
10911	785522	AA454218	3.72	18.70	5.03	1.00	0.00	16	464.97	CNS	Adrenal gland	Kidney
10915	287528	N62096	3.50	27.56	7.88	2.00	0.00					
10917	810496	AA457153	23.68	172.64	7.29	1.00	0.00	7	675.72	Smooth musc	Skin	Umbilical cord
10918	418004	W90705	23.64	153.71	6.50	2.00	0.00	10	126.92	Small intestine	Parathyroid	Eye
10929	307249	N93438	21.53	123.01	5.71	1.00	1.00			Blood	Lymph	Testis
10933	346899	W76169	4.32	24.22	5.60	1.00	0.00			Heart	LID not found	Other
10935	810911	AA459286	48.11	381.75	7.93	10.00	1.00			Thyroid	Ovary	Muscle
10937	307304	N93455	13.15	82.49	6.27	2.00	0.00			Lung	Uterus	Tonsil
10939	293895	N66025	60.68	384.91	6.34	1.00	2.00			Pool	Lung	LID not found
10940	416744	W86518	18.62	256.67	13.78	4.00	3.00	10	540.8			
10950	884263	AA669750	32.83	458.59	13.97	5.00	0.00			Skin	Bone	Ear
10951	146469	H12338	19.03	146.94	7.72	4.00	0.00			Kidney	Spleen	Breast
10953	487988	AA047478	4.52	46.81	10.36	4.00	0.00			Blood	Lymph	Spleen
10954	377275	AA055486	5.04	97.13	19.27	5.00	1.00	11	387.92	Larynx	Head and nec	Esophagus
10960	52071	H24350	2.07	10.64	5.14	1.00	0.00	7	525.96	Breast	Brain	LID not found
10963	49318	H15718	20.35	105.91	5.20	1.00	0.00	19	238.07	Synovial mem	-	Skin
10968	23579	R38349	61.59	462.04	7.50	0.00	5.00	9	358.01			
10974	293964	N66053	231.06	1167.94	5.05	0.00	1.00	6	104.19	CNS	Heart	Lymph
10975	306841	N91921	12.57	159.70	12.70	1.00	1.00	7	653.71	Thymus	Lymph	Lymph node
10984	23897	R38364	2.06	15.49	7.50	1.00	0.00	7	567.71	Brain	LID not found	Other
10985	756931	AA425934	7.75	493.54	63.69	13.00	0.00	1	558.36	Muscle	Heart	Breast
10988	74518	T59016	12.12	67.66	5.58	0.00	2.00			Spleen	Testis	LID not found
10998	30175	R42433	3.55	28.46	8.02	2.00	0.00	12	44.83	Brain	Heart	Testis
11008	34041	R44754	2.63	16.26	6.19	2.00	0.00			Brain	LID not found	Other
11011	52741	H29521	12.48	64.80	5.19	1.00	0.00	16	61.44	Ignore	Brain	Bone
11017	280697	N47443	7.45	37.68	5.05	1.00	0.00	19	185.79	CNS	Nose	Foreskin
11018	770588	AA434139	32.28	167.02	5.17	1.00	0.00	19	299.02		Adipose	Pooled
11024	21920	T72533	3.22	25.76	8.00	1.00	3.00			Brain	LID not found	Other
11030	203003	H54417	104.55	599.29	5.73	0.00	1.00	16	21.67	Larynx	Esophagus	Gall bladder
11031	32229	R42813	177.53	1271.87	7.16	1.00	2.00	9	416.74	Cervix	Eye	Brain
11032	21922	T72535	10.28	98.41	9.57	1.00	5.00			Brain	LID not found	Other

Table 2A

11036	81316	T60061	17.14	282.19	16.46	1.00	1.00	12	118.94	Ear	Foreskin	CNS
11038	741958	AA402891	3.13	28.59	9.14	1.00	0.00	11	242.83	Ovary	CNS	Prostate
11039	33466	R43867	8.40	62.33	9.75	0.00	3.00	9	37.32	Brain	LID not found	Other
11041	41822	R54193	7.40	41.20	5.57	2.00	0.00			Breast	Prostate	Ovary
11043	123085	R00046	38.27	432.24	11.29	2.00	4.00			Pool	LID not found	Other
11046	743113	AA401397	4.61	43.84	9.13	1.00	0.00					
11047	838732	AA457543	66.35	464.36	7.00	3.00	0.00	6	118.71			
11053	49922	H28985	11.47	110.09	9.59	4.00	5.00			Brain	LID not found	Other
11056	299059	N70520	37.75	200.66	5.32	0.00	1.00	15	75.1	Smooth musc	Thymus	Placenta
11060	25029	R37615	30.41	311.46	10.24	2.00	5.00	8	151.38	Brain	LID not found	Other
11061	49264	H15533	4.02	34.87	8.67	0.00	1.00	17	53.59	Adrenal gland	Pooled	Lymph
11067	340894	W57872	42.73	363.47	8.51	2.00	3.00	10	373.9	Heart	Pool	LID not found
11074	755581	AA419143	89.80	1385.32	15.41	2.00	0.00	7	52.28			
11075	838287	AA457485	79.16	417.11	5.27	1.00	0.00			Adrenal gland	Eye	Ovary
11078	627040	AA191019	29.35	194.37	6.62	2.00	1.00			Lymph	Muscle	Umbilical cord
11079	46667	H09790	20.69	120.73	5.83	0.00	1.00	19	214.06	Brain	Pool	LID not found
11080	566057	AA134985	6.05	45.92	7.59	1.00	0.00	1	338.35	Colon	Germ Cell	Kidney
11081	32663	R43319	3.29	34.80	10.57	2.00	0.00	9	416.03	Kidney	Aorta	Prostate
11082	856961	AA669674	574.04	3656.31	6.37	1.00	0.00	6	309.19		Thyroid	Gall bladder
11083	627226	AA195463	13.75	157.20	11.43	2.00	0.00			Cervix	Parathyroid	Germ Cell
11085	50562	H16793	17.67	216.14	12.23	2.00	2.00			Gall bladder	Thyroid	Parathyroid
11086	626531	AA186327	108.04	628.67	5.82	0.00	1.00	20	38.6		Cervix	Stomach
11092	25061	R38944	25.11	206.06	8.21	4.00	4.00					
11093	50585	H16795	48.24	322.62	6.69	0.00	2.00	12	455.53	Breast	Tonsil	Whole embryo
11097	40384	R54622	11.46	69.53	6.07	2.00	0.00	1	711.38	Breast	Lung	Germ Cell
11098	884500	AA629987	301.59	2058.98	6.83	1.00	2.00	4	644.94			
11101	50786	H16832	6.88	38.79	5.64	1.00	0.00	5	-4.6	Brain	LID not found	Other
11103	950497	AA599140	32.64	202.83	6.16	0.00	2.00			CNS	Germ Cell	Ovary
11105	41186	R56130	3.07	31.21	10.18	2.00	0.00	5	28.06	Brain	LID not found	Other
11108	25396	R17747	6.12	35.72	5.84	1.00	0.00			Eye	Brain	LID not found
11109	50421	H17308	5.13	33.98	6.62	1.00	0.00			Brain	Pool	LID not found
11114	302832	N90281	5.04	72.42	14.37	3.00	0.00	12	45.2	Ignore	Pooled	Pancreas
11115	268795	N24024	103.58	843.57	8.14	2.00	0.00	15	245.32	Neural	Pooled	Lymph
11116	25355	R39926	7.52	40.01	5.32	0.00	2.00	1	740.99	Pool	Brain	LID not found
11117	50805	H17634	97.71	650.07	6.65	3.00	3.00	10	508.5	Pooled	Lymph	Foreskin
11118	26196	R20755	13.33	265.62	19.93	7.00	4.00			Pool	LID not found	Other
11120	510060	AA053411	27.02	183.84	6.08	0.00	1.00	11	295.61	Lymph	Breast	Placenta
11122	526945	AA113291	12.16	69.90	5.75	1.00	0.00			Blood	Eye	Aorta
11123	731121	AA417307	14.17	73.75	5.20	0.00	1.00			Whole embryo	Spleen	Bone
11124	25983	R37410	0.98	7.66	7.78	2.00	0.00	12	287.91	Brain	LID not found	Other
11126	609743	AA169372	9.77	143.60	14.70	5.00	1.00			Eye	LID not found	Other
11127	595078	AA164819	50.61	820.56	16.21	5.00	0.00	12	101.74	Synovial mem	Foreskin	CNS
11128	41214	R56898	0.70	5.31	7.60	3.00	0.00	21	157.88	Brain	LID not found	Other
11133	67440	T49355	33.99	335.05	9.86	1.00	1.00	14	139.45	Ear	Kidney	Brain
11139	195274	R92011	34.01	263.80	7.76	3.00	0.00	12	272.22	Pool	LID not found	Other
11150	270385	N33083	8.00	1138.23	141.94	22.00	2.00			Foreskin	Placenta	Testis
11154	127230	R08184	12.07	91.10	7.55	3.00	0.00					
11163	272705	N32295	7.35	59.71	8.13	4.00	0.00	3	403.91	Ear	Foreskin	Lung
11170	417730	W88497	20.23	116.36	5.75	0.00	1.00	7	653.71	Pool	LID not found	Other
11171	196325	R92448	10.58	64.88	6.13	1.00	0.00	5	378.73	Pool	Lung	LID not found
11174	308238	N92415	12.69	83.99	6.62	1.00	0.00	17	339.79	Bone	Synovial mem	Eye
11186	415535	W80635	21.32	199.18	9.34	4.00	5.00			Pool	LID not found	Other
11188	281681	N48057	155.59	1345.02	8.64	4.00	0.00			CNS	Colon	Heart
11191	281045	N50904	5.72	40.59	7.09	1.00	0.00			CNS	Pancreas	Ovary
11200	278675	N63034	121.50	737.67	6.07	1.00	0.00	7	442.17	CNS	Placenta	Ovary

Table 2A

11206	426828	AA005254	2.27	32.71	14.39	2.00	0.00	15	165.7	Brain	Uterus	Tonsil
11207	210554	H65834	3.17	24.37	7.70	1.00	0.00			Pool	LID not found	Other
11208	278759	N62946	4.15	53.38	12.85	2.00	0.00	14	123.62	CNS	LID not found	Other
11210	307740	N92947	81.18	887.19	14.50	6.00	5.00	2	508.52	Tonsil	Lung	Pool
11218	418400	W92798	19.70	100.34	5.09	1.00	0.00	6	587.03	Pool	LID not found	Other
11220	502674	AA135886	8.31	84.03	10.11	1.00	1.00			CNS	Muscle	Pancreas
11222	131599	R23727	2.43	20.49	8.43	3.00	0.00					
11237	782575	AA447522	3.08	145.25	47.20	4.00	2.00	8	548.99	Cervix	Pancreas	Testis
11242	204740	H57306	23.86	220.26	9.23	3.00	0.00	5	343.84	Thyroid	Tonsil	Foreskin
11246	811033	AA485432	10.41	68.40	6.57	0.00	1.00			Ovary	Brain	Testis
11254	795185	AA453474	18.18	290.55	15.98	5.00	0.00	1	832.4	Adrenal gland	Pooled	Parathyroid
11256	755751	AA486630	4.20	70.39	16.76	5.00	0.00	15	236.08	Lung	Blood	Parathyroid
11258	811604	AA454610	264.67	1560.18	5.89	1.00	0.00	17	305.6	Adipose	Muscle	Prostate
11262	284160	N53512	4.39	24.23	5.52	1.00	0.00	3	160.78	CNS	Lymph	Testis
11265	795207	AA453568	3.68	31.10	8.01	2.00	0.00			Blood	Kidney	Heart
11267	143450	R74478	9.82	89.02	9.07	4.00	0.00			Tonsil	Testis	Prostate
11269	490060	AA136080	6.87	47.17	6.87	1.00	0.00			Germ Cell	Lymph	Uterus
11283	488584	AA044814	11.82	88.78	7.51	6.00	0.00	10	522.77	Foreskin	Ovary	Blood
11287	418154	W85927	74.78	538.79	7.20	3.00	0.00					
11288	382564	AA069372	41.81	524.80	12.55	0.00	2.00			-	Pooled	Kidney
11289	385707	AA025434	4.72	115.70	24.53	1.00	0.00			Colon	Germ Cell	Breast
11290	809829	AA455528	77.17	909.87	11.79	3.00	0.00	12	252.49	Liver	Pool	Heart
11295	292736	N69393	11.57	85.13	7.36	0.00	2.00	3	472.48			
11296	346698	W74602	17.31	111.75	6.45	0.00	3.00	12	20.42	Germ Cell	Pancreas	Heart
11297	795279	AA454022	6.51	42.66	6.55	1.00	0.00			Testis	Heart	LID not found
11298	795171	AA453470	3.97	32.74	8.24	2.00	0.00	7	675.72	Spleen	Testis	LID not found
11301	415630	W84790	20.12	168.22	8.36	1.00	0.00	3	688.26			
11303	244012	N38787	37.49	588.61	15.70	4.00	0.00	X	251.52	Pool	LID not found	Other
11309	201172	R98487	15.17	88.43	5.83	1.00	0.00	5	345.44	Pool	LID not found	Other
11317	324205	W47179	176.99	1065.53	6.02	2.00	0.00	8	31.44	Thyroid	Small intestine	Skin
11320	471859	AA035144	1.47	17.20	11.66	1.00	0.00			Synovial mem	Blood	-
11321	490329	AA127741	3.52	45.33	12.88	7.00	1.00	6	90.95	Pooled	Spleen	Uterus
11324	147075	R60235	18.02	106.06	5.89	1.00	0.00	17	306.66	Adipose	Placenta	Tonsil
11327	201090	R99849	30.93	170.86	5.52	1.00	0.00	3	663.89	Colon	Pool	LID not found
11330	362409	AA018457	4.24	45.89	10.82	1.00	0.00	2	568	CNS	Pooled	Eye
11333	416390	W86860	19.36	103.64	5.35	0.00	1.00			Peripheral ner	Lymph	Tonsil
11344	40598	R55367	2.18	20.79	9.54	2.00	0.00	21	18.92	Brain	LID not found	Other
11347	52865	H29820	69.85	912.86	13.07	4.00	4.00	6	201.24	Pooled	Foreskin	Brain
11348	52647	H29771	56.91	407.74	6.92	5.00	2.00	1	591.57	-	Brain	LID not found
11349	32299	R42685	14.61	99.97	6.84	0.00	1.00	18	81.46	Nose	Stomach	Blood
11350	377461	AA055835	131.51	1261.57	9.59	0.00	1.00	7	546.17			
11351	50559	H16790	99.80	753.04	7.56	1.00	3.00	1	765.21	Brain	Placenta	LID not found
11352	47074	H10417	10.95	55.53	5.07	0.00	1.00	5	49.48	Muscle	Brain	Heart
11360	51775	H23213	2.21	16.69	7.55	1.00	0.00	2	35.63	Pooled	Brain	LID not found
11361	141852	R70505	5.30	28.20	5.32	0.00	1.00			Muscle	Placenta	-
11362	288663	N62394	3.12	47.72	15.31	11.00	0.00	X	236.58	CNS	Liver	Lung
11363	50114	H16743	9.93	106.65	10.74	4.00	0.00	5	527.16	Neural	Thyroid	Brain
11364	25636	R39098	47.73	328.03	6.87	1.00	3.00			Adipose	Tonsil	Brain
11366	845355	AA844088	16.96	115.78	6.83	2.00	0.00	11	309.33	Lymph	Gall bladder	Kidney
11373	344432	W73474	36.81	247.67	6.38	1.00	0.00	4	613.42	Parathyroid	Aorta	Heart
11376	33022	R44607	63.62	746.53	11.70	6.00	3.00	4	670.02	Brain	LID not found	Other
11377	156437	R73570	8.60	229.88	26.12	1.00	0.00	13	155.48			
11389	811064	AA485442	37.64	479.89	12.75	0.00	1.00	X	272.16	Larynx	Spleen	Skin
11390	854138	AA869272	1.38	14.93	10.85	2.00	0.00			Ignore	Stomach	Uterus
11391	50843	H17551	39.45	319.46	8.10	0.00	1.00	18	113.09	Synovial mem	Skin	CNS

Table 2A

11392	33693	R44707	70.43	923.03	13.11	2.00	4.00	5	358.9	Placenta	Brain	LID not found
11393	432072	AA679278	9.96	71.22	7.15	1.00	0.00	18	477.48	Cervix	Pooled	Tonsil
11395	47054	H11012	2.84	18.65	6.56	2.00	0.00	15	59.38	Brain	Parathyroid	Testis
11396	50030	H17051	3.00	26.16	8.73	2.00	0.00	1	629.81	Brain	LID not found	Other
11403	39800	R52641	48.55	578.34	11.91	4.00	3.00			Brain	LID not found	Other
11408	46365	H09774	24.85	200.07	8.02	2.00	5.00	12	364.02	Brain	CNS	Germ Cell
11418	856447	AA630800	31.96	544.63	17.04	10.00	0.00			Lymph node	Neural	Thymus
11432	46375	H09086	44.82	384.78	8.59	2.00	5.00			Brain	Pool	LID not found
11433	60738	T40640	2.97	15.05	5.07	1.00	0.00	1	716.02	Blood	Breast	Ovary
11434	592491	AA160498	142.34	1029.76	7.23	0.00	4.00	15	171.53	Adipose	Lymph	Pancreas
11437	24938	R38885	7.38	56.03	7.86	1.00	1.00	1	629.85	Ear	Brain	Testis
11441	51083	H17139	1.49	13.89	9.29	1.00	0.00	5	39.72	Brain	CNS	Eye
11444	49941	H29211	38.29	357.57	9.34	4.00	5.00			Brain	Pool	LID not found
11446	626016	AA187938	29.87	544.51	18.23	1.00	0.00					
11447	842896	AA486418	40.06	337.37	8.42	0.00	1.00	7	94.62	Umbilical cord	Parathyroid	Cervix
11448	838899	AA484935	6.92	45.33	6.55	0.00	1.00	4	635.64	Stomach	Colon	Brain
11452	773573	AA428239	6.72	124.52	18.54	4.00	0.00	4	109.02	Spleen	Whole embryo	Pool
11460	52057	H24323	2.94	19.63	6.69	1.00	0.00	8	300.54	Brain	Aorta	Pool
11473	841624	AA487462	17.64	91.09	5.16	1.00	0.00					
11477	70384	T54474	28.38	188.40	6.64	3.00	0.00			Foreskin	Placenta	LID not found
11480	838668	AA457235	8.00	121.91	15.23	2.00	0.00	2	56.46	Pooled	Brain	Colon
11482	731044	AA421273	18.11	121.44	6.71	0.00	1.00	1	649.11	Blood	Testis	Germ Cell
11487	842973	AA488332	209.06	1432.51	6.85	1.00	1.00	12	247.55	Cervix	Lymph node	Marrow
11489	70027	T48767	13.55	76.05	5.61	2.00	0.00	21	152.58			
11492	53091	R15784	1.72	28.75	16.69	3.00	0.00	9	274.79	Brain	CNS	Whole embryo
11496	758319	AA404273	2.00	17.37	8.67	1.00	0.00	17	317.6	Pooled	Germ Cell	Whole embryo
11498	32530	R43286	4.34	23.38	5.38	1.00	1.00	7	409.94	Brain	LID not found	Other
11502	587992	AA130596	31.72	257.83	8.12	0.00	1.00			Pooled	Lymph	Eye
11509	840783	AA486092	17.02	261.44	15.36	9.00	0.00	3	120.51	Lymph node	Head and nec	Foreskin
11510	950667	AA608560	8.23	81.41	9.89	1.00	0.00			Ovary	Testis	Whole embryo
11516	26203	R20650	3.10	16.38	5.29	0.00	1.00	9	377.82	Cervix	Brain	Ovary
11527	289023	N82737	3.98	32.62	8.19	1.00	1.00	4	671.55	CNS	Testis	Eye
11534	302025	N89753	6.30	66.71	10.59	2.00	0.00	5	421.53	Tonsil	Lung	Pool
11539	810737	AA457723	17.34	117.63	6.78	1.00	0.00			Ovary	Spleen	Pancreas
11542	124742	R02173	7.18	51.57	7.18	0.00	2.00	1	625.71	Blood	Pool	Tonsil
11554	429353	AA007522	34.31	183.25	5.34	1.00	0.00	14	260.52			
11580	290748	N71792	4.26	22.73	5.33	1.00	0.00			Foreskin	LID not found	Other
11586	415904	W86195	5.77	42.00	7.28	3.00	0.00			Pool	LID not found	Other
11588	268288	N26663	15.68	102.37	6.53	1.00	0.00	12	104.58	Foreskin	Testis	LID not found
11590	415894	W86387	3.87	41.48	10.71	2.00	0.00	6	86.9	Pool	LID not found	Other
11604	291091	N67678	18.53	102.08	5.51	0.00	1.00	X	272.18	Larynx	Spleen	Skin
11617	810050	AA455286	32.08	192.03	5.99	3.00	0.00			Ovary	Kidney	Colon
11619	298097	N69044	524.79	4910.39	9.36	2.00	0.00	21	245.37	Nose	Neural	Thyroid
11620	415321	W92041	3.44	24.85	7.23	2.00	0.00	11	230.62	Peripheral ner	Skin	CNS
11622	256033	N30316	6.26	34.38	5.49	3.00	0.00	10	249.3	Tonsil	Placenta	Pool
11623	810621	AA464744	6.05	32.34	5.35	2.00	0.00			Neural	Umbilical cord	Tonsil
11624	562729	AA086471	9.30	466.41	50.13	3.00	0.00	1	553.07	Bone marrow	Larynx	Smooth muscle
11630	293438	N58854	541.51	4939.44	9.12	1.00	0.00					
11631	810082	AA464952	50.59	308.50	6.10	2.00	0.00			Eye	Brain	-
11632	377441	AA055242	6.52	126.13	19.33	2.00	0.00	1	554.63	Skin	CNS	Heart
11636	261274	H98255	6.87	46.50	6.77	0.00	1.00			Foreskin	Colon	Testis
11639	245137	N54395	2.94	30.80	10.49	4.00	0.00					
11640	756595	AA444051	21.04	251.75	11.97	3.00	0.00	1	545.68	Lymph node	Head and nec	Small intestine
11643	302221	N77828	20.48	136.65	6.67	2.00	0.00	1	536.82	Colon	Lung	Tonsil
11645	357544	W94063	11.51	100.86	8.76	0.00	2.00			Heart	Testis	Pool

Table 2A

11649	489047	AA047190	5.14	79.80	15.53	0.00	2.00			Germ Cell	Uterus	-
11652	270038	N27829	80.86	468.50	5.77	1.00	0.00	6	189.84			
11657	325383	W52190	2.85	25.52	8.94	1.00	0.00			-	Germ Cell	Brain
11669	609479	AA443121	5.55	58.36	10.52	1.00	0.00			Ovary	Lymph	Heart
11678	810772	AA481745	7.13	42.90	6.01	2.00	0.00			Pooled	Brain	Pancreas
11679	376306	AA041254	5.61	44.52	7.93	1.00	0.00					
11682	278504	N86139	3.75	32.12	8.56	2.00	0.00	1	106.17	Skin	Brain	Foreskin
11684	282108	N51499	42.44	302.25	7.12	0.00	1.00	9	346.22			
11685	418297	W90748	11.11	92.30	8.31	1.00	0.00			Heart	Pool	LID not found
11686	428124	AA002091	11.68	115.02	9.85	3.00	0.00			Pool	LID not found	Other
11695	299162	N75473	12.15	63.41	5.22	1.00	0.00			Synovial mem	Head and nec	Spleen
11697	770997	AA427715	93.95	548.03	16.14	1.00	0.00					
11704	415851	W86282	27.06	136.32	5.04	0.00	1.00	2	508.83	Larynx	Adipose	Stomach
11711	281039	N47717	31.87	170.13	5.34	1.00	0.00	8	413.37			
11713	324927	W49494	4.12	23.57	5.72	1.00	0.00	9	157.1	Stomach	Brain	-
11723	845519	AA644234	238.75	1212.16	5.12	1.00	0.00	14	123.72	Umbilical cord	Skin	Esophagus
11726	611586	AA176957	5.14	34.60	6.72	1.00	0.00	2	504.23	Muscle	Ear	Whole embryo
11728	22144	T72562	21.34	123.48	5.79	1.00	2.00	13	130.86	Tonsil	Brain	Whole embryo
11731	814353	AA458838	29.89	303.93	10.17	0.00	1.00	18	399.44	Blood	Tonsil	Pancreas
11735	53103	R15794	93.34	825.31	8.84	3.00	3.00			Brain	LID not found	Other
11757	340857	W56771	22.51	258.14	11.47	2.00	0.00			Smooth musc	Germ Cell	Uterus
11761	454190	AA677083	10.84	54.72	5.05	1.00	0.00			Ignore	Synovial mem	Adipose
11763	200263	R97710	15.77	84.82	5.38	1.00	0.00	11	373.42	Liver	Spleen	Gall bladder
11773	884436	AA629686	2.73	29.30	10.75	1.00	0.00			Head and nec	Thyroid	Stomach
11774	60565	T40541	9.60	78.19	8.15	7.00	0.00	2	745.31	Omentum	Peripheral ner	Ear
11778	179163	H50114	7.60	498.55	65.33	13.00	1.00			Brain	Eye	LID not found
11782	51406	H18950	10.34	57.12	5.53	1.00	0.00	20	261.08	Kidney	CNS	Blood
11784	25153	R38678	5.40	37.16	6.88	1.00	1.00	3	215.15	Brain	LID not found	Other
11789	503579	AA131238	4.36	29.41	6.75	2.00	0.00	12	352.69	Ear	Whole embryo	Uterus
11792	46183	H09616	1.57	11.56	7.36	1.00	1.00	12	485.02	Brain	LID not found	Other
11795	378813	AA683520	97.97	639.38	6.53	1.00	0.00	20	248.09			
11800	51585	H24020	2.23	11.67	5.24	0.00	1.00			Brain	Eye	LID not found
11801	755517	AA419088	8.11	40.97	5.05	1.00	0.00			Head and nec	Adipose	Ovary
11808	47262	H10709	2.38	14.45	6.08	1.00	0.00			Brain	Pool	LID not found
11809	46921	H10228	2.23	13.48	6.05	1.00	0.00	5	22.84	Brain	LID not found	Other
11810	509887	AA056465	52.54	403.36	7.68	0.00	2.00				Esophagus	Eye
11817	46097	H08796	1.97	11.13	5.65	1.00	0.00	1	372.21	Brain	LID not found	Other
11820	26387	R39804	6.33	34.34	5.43	1.00	0.00			Brain	LID not found	Other
11821	51548	H20826	45.73	599.97	13.12	8.00	3.00	5	421.53			
11822	364839	AA053982	30.51	279.50	9.16	0.00	5.00			Heart	Pool	LID not found
11825	40908	R55809	2.91	100.79	34.65	1.00	1.00	12	276.54	Aorta	Eye	Lung
11827	840575	AA487895	146.68	961.14	8.55	0.00	3.00	19	70.89	Neural	Nose	Synovial membrane
11828	32050	R41872	11.49	58.22	5.07	1.00	0.00	2	355.54	Smooth musc	Brain	Aorta
11833	40771	R56045	5.65	38.52	6.81	1.00	2.00	6	456.69	Brain	LID not found	Other
11836	26520	R20670	8.30	70.82	8.54	1.00	0.00			Pooled	Whole embryo	Pool
11840	583592	AA101155	113.34	734.17	6.48	4.00	4.00	11	373.32	Marrow	Foreskin	Ovary
11841	47451	H11695	1.64	11.63	7.08	1.00	0.00			Brain	Lung	Pool
11842	592602	AA158244	11.50	74.01	6.44	4.00	0.00	18	27.41	Pancreas	Uterus	Heart
11845	51799	H23524	2.88	31.19	10.84	1.00	0.00	18	327.21	Bone	Brain	Adrenal gland
11847	627105	AA190634	10.28	54.65	5.32	0.00	1.00			Cervix	Testis	LID not found
11851	839784	AA505003	25.86	480.86	18.60	6.00	3.00			Eye	LID not found	Other
11854	742541	AA400013	7.81	58.38	7.47	0.00	1.00			Testis	Pool	LID not found
11857	41182	R56134	37.30	517.67	13.88	5.00	5.00	22	139.11	Lymph	Parathyroid	Ovary
11859	511718	AA121158	39.36	288.78	7.34	1.00	3.00	5	511.5	Pool	Colon	LID not found
11860	51992	H23230	116.78	633.05	5.42	2.00	3.00	4	668.3	Brain	LID not found	Other

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11861	49728	H29198	4.23	22.08	5.21	1.00	0.00			Germ Cell	Tonsil	Brain
11869	49839	H29265	13.95	72.82	5.22	1.00	0.00	6	548.42	Testis	Brain	LID not found
11873	52562	H29538	2.13	30.06	14.09	2.00	0.00	11	38.33	Brain	LID not found	Other
11875	757197	AA496139	6.05	34.13	5.64	1.00	0.00			Testis	LID not found	Other
11877	49752	H29285	6.09	51.27	8.41	1.00	0.00			Prostate	Brain	LID not found
11878	276805	N40554	94.95	939.13	9.89	0.00	3.00	11	253.29	CNS	Lung	Eye
11881	46627	H10045	3.31	114.04	34.44	6.00	2.00	1	334.46	Kidney	Colon	Pool
11884	33122	R44477	178.57	1301.83	7.29	2.00	2.00			Blood	Whole embryo	Eye
11887	842994	AA488341	33.90	238.88	7.05	1.00	0.00	20	339.91	Breast	Pooled	Ovary
11888	23889	R38179	3.57	22.10	6.20	1.00	0.00			Brain	Prostate	LID not found
11889	41228	R58953	0.95	6.63	6.97	1.00	0.00	X	98.93	Brain	LID not found	Other
11890	1049033	AA778675	20.84	412.56	19.80	0.00	1.00					
11892	33150	R43822	6.82	60.98	8.94	3.00	0.00			Brain	LID not found	Other
11895	266347	N26740	4.96	130.46	26.33	1.00	0.00	18	430.87	Foreskin	LID not found	Other
11896	50782	H17024	165.49	1777.73	10.74	2.00	3.00	19	218.51	Brain	LID not found	Other
11897	51242	H19343	2.18	18.54	8.51	3.00	2.00			Heart	Brain	LID not found
11899	321934	W37808	16.16	150.26	9.30	2.00	3.00	10	175.23	Parathyroid	LID not found	Other
11900	34388	R44265	1.57	16.05	10.23	3.00	0.00	12	78.84	Brain	LID not found	Other
11901	67670	T49557	89.92	563.55	6.27	0.00	2.00	15	263.36	Gall bladder	Bone	Lymph
11908	428585	AA005329	7.16	37.99	5.31	0.00	1.00	1	14.16	CNS	Brain	Tonsil
11911	210803	H67707	125.14	694.85	5.55	2.00	0.00					
11928	292697	N63628	7.16	36.56	5.39	1.00	0.00			Uterus	Pool	LID not found
11930	491405	AA150417	6.32	32.27	5.11	1.00	0.00	X	245.06	Thyroid	Uterus	Bone
11931	290280	N64464	3.74	29.88	8.00	3.00	0.00	12	345.86	CNS	Pool	Brain
11935	211870	H66708	39.78	222.46	5.59	1.00	1.00			Neural	Pool	LID not found
11944	290429	N64532	2.37	64.08	27.03	2.00	0.00			Ignore	CNS	Brain
11946	128167	R12386	61.05	1031.07	12.72	3.00	0.00					
11948	283058	N51291	37.62	215.01	5.72	1.00	0.00	8	563.64	CNS	LID not found	Other
11950	340864	W56597	5.81	91.03	16.22	1.00	0.00	8	118.65	Heart	Placenta	Ovary
11962	385642	AA025930	5.43	56.03	10.33	6.00	0.00	22	88.54	Heart	Testis	Pool
11963	280954	N50845	3.97	33.51	8.45	2.00	0.00	3	212.5	Aorta	CNS	LID not found
11966	795851	AA461529	3.14	24.16	7.69	1.00	0.00	1	589.17	Testis	Pooled	Uterus
11968	343401	W67228	185.27	1859.95	10.04	3.00	0.00	19	271.02	Thyroid	Adipose	Gall bladder
11975	212101	H68938	6.70	38.41	5.43	1.00	0.00					
11976	278859	N66607	5.21	26.90	5.16	2.00	0.00	1	619.28	CNS	LID not found	Other
11979	197067	R93401	2.75	18.52	6.74	1.00	0.00			Pool	LID not found	Other
11980	357819	W95480	3.61	19.61	5.42	1.00	0.00			CNS	Heart	Whole embryo
11994	427799	AA001604	13.69	114.41	8.36	0.00	3.00			Pool	LID not found	Other
11996	282663	N50056	268.60	1668.08	6.21	2.00	0.00			CNS	Prostate	LID not found
11998	427996	AA001841	6.71	52.38	7.81	1.00	0.00			Placenta	Germ Cell	Aorta
12003	279966	N57551	14.33	100.27	7.00	2.00	0.00	3	681.29	Parathyroid	Bone	Aorta
12007	198866	H82872	24.43	167.52	6.86	1.00	0.00	15	245.64	Pool	LID not found	Other
12008	435551	AA701914	4.24	99.38	23.45	4.00	0.00					
12011	195635	R89317	11.25	119.15	10.59	5.00	0.00			Placenta	Pool	LID not found
12012	359661	AA011096	15.33	92.67	6.04	2.00	0.00	X	130.55	Small Intestine	Adipose	Prostate
12016	236059	H53703	8.29	259.74	31.33	5.00	1.00	17	307.8	Pooled	Placenta	Germ Cell
12018	809634	AA458498	104.92	755.78	7.20	2.00	0.00			Ovary	Testis	LID not found
12019	504461	AA152183	9.21	123.28	13.39	1.00	0.00	1	750.98	Skin	Placenta	Adrenal gland
12022	320509	W04674	126.52	804.80	7.15	1.00	0.00	16	416.13	Head and nec	Cervix	Lymph
12026	795531	AA459858	4.16	26.09	6.27	1.00	0.00			Kidney	Ovary	Uterus
12032	432564	AA699361	45.66	266.65	5.81	3.00	0.00					
12033	489640	AA099386	2.01	18.40	9.15	1.00	0.00			Uterus	Parathyroid	LID not found
12035	234490	H95362	22.35	191.34	8.56	3.00	0.00			Liver	Pooled	Blood
12040	290091	N63260	11.59	72.82	6.28	2.00	0.00	9	155.85	CNS	Testis	Germ Cell
12045	505575	AA147641	10.22	65.99	6.45	1.00	0.00	2	663.76	Uterus	LID not found	Other

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12046	124447	R01094	17.48	123.68	7.07	6.00	0.00	2	680.68	Ovary	Spleen	Colon
12049	491311	AA150198	2.52	15.90	6.31	2.00	0.00			Uterus	LID not found	Other
12051	324323	W47552	10.21	69.89	6.84	3.00	0.00	6	463.25			
12053	501876	AA128008	87.99	557.11	6.19	3.00	0.00	18	27.41	Uterus	LID not found	Other
12054	429165	AA005108	10.29	55.37	5.38	1.00	0.00	11	292.28	Neural	Pool	LID not found
12056	854696	AA630094	36.84	391.68	10.64	6.00	0.00	8	564.08	Larynx	Esophagus	Thymus
12059	204536	H58250	98.06	613.80	6.26	1.00	0.00	5	358.9			
12060	291880	N67487	67.91	404.61	5.96	1.00	0.00	1	62.05	Skin	Bone	Blood
12061	502618	AA136052	2.68	33.04	11.48	1.00	0.00	21	142.57	Uterus	Prostate	LID not found
12063	502333	AA156793	24.09	155.77	6.47	2.00	0.00	20	267.89	Head and nec	Cervix	Adipose
12066	795687	AA459937	4.98	36.48	7.33	3.00	0.00			Testis	Brain	LID not found
12069	502634	AA127017	35.10	445.08	12.68	7.00	0.00	1	15.89	Muscle	Uterus	Brain
12071	810711	AA457700	34.08	205.23	6.02	0.00	1.00	10	460.31	Breast	Small intestine	Ovary
12073	501890	AA128017	2.81	23.99	8.54	2.00	1.00			Uterus	Testis	LID not found
12077	770789	AA427621	5.16	37.49	7.24	2.00	0.00	12	298.79	Bone	Kidney	Ovary
12085	301867	N92478	12.26	68.39	5.58	1.00	0.00	15	147.26	Gall bladder	Bone	Ovary
12086	771060	AA427522	5.60	50.48	9.01	1.00	0.00			Ovary	Brain	LID not found
12087	202194	H52379	3.17	23.48	7.41	1.00	0.00	1	568.94	Pool	Bone	LID not found
12088	856135	AA630604	0.64	6.24	9.68	2.00	0.00	18	200.17	Small intestine	Skin	CNS
12089	491244	AA152289	2.47	15.99	6.47	2.00	0.00			Uterus	LID not found	Other
12092	590264	AA155813	130.40	677.23	5.19	1.00	0.00	12	68.19	Umbilical cord	Adipose	Aorta
12093	503749	AA131469	4.93	45.82	9.30	1.00	0.00	6	328.81	Uterus	LID not found	Other
12094	144925	R78521	536.48	8999.87	16.78	5.00	0.00	19	271.02			
12103	61044	T40725	41.16	403.09	9.79	5.00	1.00			Spleen	Lymph	Pool
12104	46931	H10030	3.69	19.99	5.41	0.00	1.00	14	247.37	Brain	Testis	Prostate
12108	51511	H18958	3.06	17.62	5.77	2.00	0.00	14	175.36	Heart	Brain	Breast
12113	45578	H07920	3.50	224.15	63.98	2.00	1.00			Pooled	Muscle	Lymph
12119	81462	T40927	2.31	14.80	6.41	1.00	0.00			Liver	LID not found	Other
12120	50983	H18017	1.08	6.60	6.10	1.00	0.00	1	173.21	Brain	LID not found	Other
12122	433253	AA699427	10.02	73.66	7.36	1.00	0.00					
12123	46716	H10012	4.26	29.77	6.98	1.00	0.00	17	534.21	Blood	Whole embryo	Tonsil
12129	141615	R70685	25.04	189.33	7.56	2.00	0.00	20	73.18	Head and nec	Blood	Pooled
12130	279790	N48355	45.38	280.10	6.17	1.00	0.00	X	337.33	CNS	Tonsil	Uterus
12131	85409	T71991	92.22	506.27	5.49	1.00	0.00	1	606.38	Larynx	Thymus	Stomach
12134	724888	AA291484	3.75	119.61	31.92	10.00	0.00	1	151.1	Ovary	Eye	Heart
12136	34321	R44949	1.63	10.11	6.20	1.00	0.00	10	90.1	Brain	LID not found	Other
12138	502367	AA134871	46.83	437.30	9.34	1.00	0.00	22	154.77	Ignore	Placenta	Esophagus
12139	51700	H22854	7.76	118.71	15.29	1.00	0.00			Parathyroid	CNS	Brain
12140	25984	R37411	1.82	73.60	40.50	4.00	3.00	9	257.9	Small intestine	Brain	LID not found
12143	77911	T61269	11.40	188.77	16.56	1.00	0.00	8	447.53	Liver	Foreskin	Pooled
12145	855745	AA663981	29.67	3034.57	102.27	9.00	0.00	14	278.45			
12148	45391	H08194	4.44	47.46	10.68	1.00	0.00	7	30.48	Brain	Heart	Pool
12150	854401	AA668959	15.45	87.81	5.68	1.00	1.00	10	313.32	Pool	Lung	LID not found
12151	78946	T61792	49.64	590.37	11.89	1.00	0.00	7	492.68	Small intestine	Thymus	Synovial membrane
12152	34442	R44986	17.53	125.84	7.17	1.00	0.00	3	143.12	CNS	Whole embryo	Brain
12153	77539	T58775	41.58	351.19	8.45	3.00	0.00			Liver	LID not found	Other
12154	855755	AA663986	227.17	1789.14	7.88	1.00	1.00	19	235.13	Umbilical cord	Skin	Stomach
12160	46328	H10641	2.32	26.81	11.57	2.00	0.00	15	206.38	Brain	LID not found	Other
12162	868380	AA634109	13.50	98.24	7.27	3.00	0.00	1	578.51	Placenta	Aorta	Gall bladder
12163	83345	T68440	110.82	1275.71	11.51	3.00	3.00	9	140.54	Pooled	Liver	Foreskin
12164	32331	R42922	81.54	770.47	9.45	3.00	5.00	1	258.93	Brain	LID not found	Other
12166	307471	N93505	29.77	160.20	5.38	1.00	0.00	X	115.67	Adrenal gland	Ear	Eye
12169	745019	AA626028	8.25	43.41	6.95	2.00	0.00	11	248.09	Tonsil	Gall bladder	Pancreas
12170	307660	N92901	21.63	766.95	35.45	1.00	0.00			Adipose	Pooled	Heart
12171	47428	H11088	12.11	90.48	7.47	0.00	1.00	12	349.48	Stomach	Spleen	Placenta

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12172	40100	R54590	3.74	35.78	9.56	2.00	0.00	1	674.22	CNS	Colon	Lung
12173	345626	W72051	3.24	19.91	6.15	1.00	0.00			Bone	CNS	Brain
12174	530185	AA111969	12.83	93.26	7.27	1.00	0.00	6	43.37	Thyroid	Lymph	Tonsil
12176	49443	H15427	1.53	9.47	6.17	1.00	1.00	1	597.06	Brain	LID not found	Other
12179	79565	T62854	11.13	56.82	5.11	2.00	0.00	12	51.04	Colon	Bone	Lung
12180	50443	H17325	1.49	8.81	5.90	1.00	0.00	17	55.98	Brain	LID not found	Other
12181	739155	AA421819	25.69	382.06	14.76	0.00	1.00	5	116.08	Pooled	Ovary	Whole embryo
12185	740604	AA479795	16.77	148.77	8.87	2.00	0.00			Esophagus	Gall bladder	Blood
12190	431655	AA676453	10.67	55.57	5.21	1.00	0.00	19	258.89	Lymph	Blood	Breast
12192	32587	R43595	36.21	546.94	15.10	2.00	4.00	18	62.76	Germ Cell	Foreskin	Heart
12193	83358	T68445	16.59	134.75	8.12	4.00	0.00	X	238.33	Smooth musc	Liver	Prostate
12201	84713	T74257	8.01	47.51	5.93	2.00	0.00	4	634.21	Gall bladder	Liver	Spleen
12202	25132	R37620	29.43	155.76	5.29	2.00	0.00			Brain	LID not found	Other
12210	838829	AA481769	43.33	220.08	5.08	0.00	1.00	1	667.01	Thyroid	Testis	Heart
12213	46977	H10372	168.82	2024.13	12.15	0.00	4.00	19	71.09			
12217	67759	T49652	11.14	75.15	6.74	2.00	0.00	13	88.38	Gall bladder	Blood	Lymph
12218	773556	AA428162	198.52	1230.98	8.20	0.00	2.00					
12219	843008	AA488391	117.75	1108.01	9.41	0.00	1.00	3	137.52	Thymus	Lymph	Cervix
12227	842946	AA489324	79.39	482.96	6.08	1.00	2.00	17	319.26	Testis	Omentum	Larynx
12235	510464	AA055656	63.42	451.49	7.12	2.00	0.00	17	341.89			
12237	49303	H15677	3.04	118.26	38.92	3.00	0.00	5	552.2	Ear	Pooled	Brain
12240	796760	AA460722	60.77	633.37	10.42	1.00	2.00			Stomach	Placenta	Aorta
12244	23774	R38196	6.61	55.60	8.41	5.00	0.00	1	630.22			
12245	46553	H10679	7.60	50.71	6.67	4.00	2.00	9	382.31	Brain	LID not found	Other
12247	234977	H73640	9.43	60.55	6.42	0.00	2.00	8	89.33	Foreskin	Pool	Parathyroid
12250	796285	AA460848	26.70	137.22	5.14	1.00	0.00	1	737.93	Thyroid	Foreskin	Tonsil
12254	602277	AA156597	18.64	96.67	5.19	1.00	0.00	16	63.62	Testis	Uterus	Colon
12259	897761	AA598468	120.52	741.07	6.15	0.00	1.00			Larynx	Foreskin	Thyroid
12260	22762	R38543	3.49	33.77	9.67	2.00	0.00	8	483.92	Brain	LID not found	Other
12261	52755	H29783	9.47	219.72	23.20	9.00	0.00					
12266	612809	AA179600	5.25	30.81	5.87	0.00	1.00	10	349.63	Cervix	-	LID not found
12267	838774	AA457566	2.16	27.87	12.89	2.00	0.00	1	720.56	Thymus	Cervix	Foreskin
12268	22773	R38613	187.84	2394.83	12.75	2.00	0.00	X	245.06	Whole embryo	Heart	Brain
12271	731270	AA416684	11.64	61.66	5.30	0.00	1.00			Parathyroid	Heart	Whole embryo
12272	136399	R34297	72.17	498.81	6.91	0.00	1.00			Thymus	Placenta	Cervix
12276	23116	R39179	95.08	674.88	7.10	4.00	3.00	16	502.56			
12281	41198	R56870	31.76	160.84	5.06	1.00	0.00	5	610.47	Thyroid	Ear	Lung
12282	46843	H10072	5.18	27.22	5.26	1.00	0.00	19	20.17	Heart	Brain	Breast
12283	731023	AA421266	8.09	40.62	5.02	0.00	1.00			Stomach	Tonsil	Kidney
12285	50266	H17463	4.91	67.50	13.74	1.00	0.00			Kidney	Colon	Brain
12286	286503	N67366	86.20	563.46	6.54	0.00	1.00			Ear	Lymph	Umbilical cord
12290	320209	W04509	3.54	27.56	7.79	0.00	1.00			Germ Cell	Parathyroid	Testis
12300	298091	N70756	65.05	501.31	7.71	2.00	2.00			Lung	LID not found	Other
12304	309368	N93967	171.56	1303.92	7.60	2.00	3.00	4	450.37	Lung	LID not found	Other
12306	784214	AA446865	40.13	280.98	7.00	1.00	0.00	15	307.86	Adipose	Umbilical cord	Lymph
12307	251147	H97366	18.98	104.47	5.51	0.00	1.00	4	643.02	Foreskin	Parathyroid	Whole embryo
12316	525478	AA065042	9.73	110.92	11.40	4.00	0.00	21	170.13	Tonsil	Prostate	Parathyroid
12319	260170	N32072	24.77	316.35	12.77	2.00	0.00					
12322	510273	AA053165	167.30	2378.38	14.22	5.00	0.00	11	249.52	Trachea	Parathyroid	Thyroid
12328	309895	N94488	8.91	114.36	12.84	4.00	2.00			-	LID not found	Other
12343	259275	N32847	600.52	6799.12	11.32	2.00	0.00	1	81.33	Pool	LID not found	Other
12344	321905	W37663	8.39	161.74	19.27	1.00	1.00	14	75.06	Parathyroid	Whole embryo	Testis
12351	594323	AA169202	15.71	83.20	5.29	1.00	0.00			Tonsil	Eye	Aorta
12358	127368	R08548	26.49	133.72	5.05	0.00	1.00			Uterus	Tonsil	Colon
12382	510380	AA055404	79.29	666.72	8.41	0.00	5.00			Colon	Pool	LID not found

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12363	261408	H98967	678.82	4011.17	5.91	1.00	0.00	3	139.88	Blood	Foreskin	Heart
12364	291082	N72113	97.45	563.39	5.78	0.00	1.00	17	385.71	Muscle	Tonsil	Foreskin
12370	299723	N75055	32.59	276.70	8.49	0.00	1.00	11	276.96	Cervix	Aorta	Breast
12374	950603	AA608546	34.98	181.50	5.19	0.00	1.00			Thyroid	Ear	Adrenal gland
12382	773293	AA425214	3.52	78.41	21.70	1.00	0.00			Pooled	Muscle	Breast
12384	308446	N95490	93.80	671.66	7.16	0.00	2.00					
12387	298236	N70837	3.44	21.88	6.37	2.00	0.00			Aorta	Lung	Pool
12395	286566	N67305	37.55	353.93	9.43	0.00	1.00			Ear	Ovary	Eye
12397	511302	AA086005	5.76	32.83	5.70	1.00	0.00	7	84.81	Colon	LID not found	Other
12402	300815	N80764	3.14	51.61	16.44	0.00	1.00			Thyroid	Whole embryo	Lung
12404	950594	AA608531	8.90	91.05	10.23	1.00	0.00	1	689.84	Ear	Prostate	Whole embryo
12406	743314	AA400492	3.81	21.93	5.75	1.00	0.00			Testis	LID not found	Other
12411	304868	N93197	13.85	92.16	6.65	1.00	1.00	5	509.69	Heart	LID not found	Other
12419	305408	N95073	59.74	502.87	8.42	0.00	3.00			Parathyroid	LID not found	Other
12420	758343	AA404286	126.17	650.44	5.16	0.00	1.00	10	381.57			
12421	511776	AA088438	55.43	1150.75	20.76	0.00	3.00	10	45.1	Kidney	Tonsil	Colon
12431	784016	AA443698	42.95	296.62	6.91	1.00	1.00			Head and nec	Ear	Prostate
12441	626716	AA191548	34.14	183.71	5.38	0.00	1.00			Cervix	Tonsil	Prostate
12444	743297	AA400422	22.29	165.43	7.42	0.00	1.00					
12449	840530	AA487934	36.21	298.35	8.24	2.00	0.00			Ear	Adrenal gland	Parathyroid
12461	489833	AA101876	20.27	319.08	15.74	0.00	1.00					
12463	757327	AA437094	24.84	140.70	5.66	0.00	1.00					
12465	376088	AA040389	3.76	36.98	9.83	0.00	2.00	4	490.66	Heart	Pool	LID not found
12466	324762	AA284112	7.77	71.23	9.16	1.00	4.00			-	LID not found	Other
12468	242009	H93318	7.91	88.94	11.24	1.00	0.00			Pool	LID not found	Other
12470	742830	AA406048	7.47	38.53	5.16	1.00	0.00			Testis	Parathyroid	Kidney
12471	796166	AA461084	120.27	768.29	6.55	0.00	2.00	14	260.52	Whole embryo	Kidney	LID not found
12475	323251	W42996	0.84	4.42	5.25	1.00	0.00			Pooled	Tonsil	-
12476	113257	T83646	12.99	188.46	14.51	0.00	2.00	2	467.65			
12477	562447	AA100595	94.96	843.60	8.88	1.00	2.00			Muscle	LID not found	Other
12482	292982	N69100	33.00	217.30	6.59	4.00	0.00	11	301.58	Brain	LID not found	Other
12483	1031599	AA609485	8.51	77.75	9.14	0.00	3.00			Testis	LID not found	Other
12485	134297	R31933	110.55	750.61	6.79	0.00	2.00			Ovary	Placenta	Brain
12488	48142	H12105	6.34	50.11	7.91	0.00	1.00	1	666.75	Stomach	Brain	Pool
12489	1031907	AA609744	6.81	74.79	10.98	1.00	0.00			Testis	Kidney	Pool
12493	77371	T55340	84.66	464.12	5.48	0.00	1.00	9	377.24	Ovary	LID not found	Other
12495	788205	AA453420	18.45	107.33	5.82	1.00	0.00	6	79.75	Smooth musc	Pooled	Thymus
12496	43840	H04795	6.91	36.33	5.26	0.00	1.00	5	380.7	Brain	LID not found	Other
12497	1031919	AA609749	54.00	370.29	6.86	0.00	1.00			Pancreas	Kidney	Heart
12498	1031719	AA609585	60.21	508.50	8.45	0.00	2.00			Testis	LID not found	Other
12504	41699	R59580	51.47	398.04	7.73	2.00	5.00	6	463.04	Brain	LID not found	Other
12508	296468	N70203	116.59	864.90	7.58	0.00	2.00	1	722.7	Foreskin	Bone	Eye
12507	1031748	AA609599	4.41	48.96	11.10	1.00	1.00	X	143.33	Testis	LID not found	Other
12511	766260	AA424950	14.35	88.83	6.19	1.00	0.00	20	194.39	Tonsil	Heart	Brain
12512	35366	R45567	33.98	313.65	9.23	2.00	5.00	5	320.66	Brain	LID not found	Other
12517	74283	T55236	1156.15	5802.59	5.02	1.00	0.00	1	82.43	Spleen	LID not found	Other
12518	593026	AA159356	6.05	60.40	9.99	1.00	0.00			Pancreas	LID not found	Other
12525	73472	T55437	59.85	560.69	9.37	0.00	3.00			Spleen	LID not found	Other
12526	593972	AA165116	85.83	627.56	7.31	0.00	2.00	14	151.82	Ovary	LID not found	Other
12527	811927	AA454668	40.64	427.64	10.52	5.00	0.00	9	377.31	Pool	LID not found	Other
12528	35626	R45292	23.27	312.81	13.44	0.00	2.00	12	200.16	Pancreas	Blood	Whole embryo
12531	1031767	AA609626	121.20	871.57	7.19	0.00	2.00			Testis	LID not found	Other
12535	36491	R48700	1.89	10.11	5.36	1.00	0.00	3	484.87	Germ Cell	Heart	Kidney
12538	294685	N71303	228.24	2498.37	10.95	0.00	2.00			Pool	LID not found	Other
12548	665405	AA195002	19.86	111.28	5.60	1.00	0.00	15	171.5	Breast	Pancreas	Uterus

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12549	38816	R49144	978.67	9313.38	9.52	0.00	1.00	2	682.76	-	Colon	Pool
12550	594178	AA169498	74.70	595.57	7.97	0.00	4.00	5	413.49	Ovary	LID not found	Other
12555	1031785	AA609648	30.95	469.68	15.17	0.00	4.00	20	193	Testis	LID not found	Other
12557	27515	R40208	730.67	7138.07	9.77	0.00	2.00	5	511.76	Nose	Adipose	Thyroid
12558	594226	AA169535	305.00	1526.80	5.01	0.00	1.00			Ovary	Brain	LID not found
12563	1031839	AA609695	42.40	500.01	11.79	0.00	4.00			Testis	Pool	LID not found
12567	665356	AA194983	16.91	122.78	7.26	1.00	1.00			Aorta	Bone	Ear
12568	38676	R51504	11.96	82.28	6.88	1.00	0.00	22	27.42	Thyroid	Placenta	Brain
12573	32775	R43521	5.65	30.93	5.47	0.00	1.00	12	311.24	Brain	LID not found	Other
12581	767690	AA417950	10.68	95.74	8.96	1.00	0.00	4	422.79	Adipose	Blood	CNS
12589	767706	AA417956	55.25	1348.92	24.41	2.00	0.00	2	599.98	Foreskin	Tonsil	Parathyroid
12592	280507	N47312	37.55	195.86	5.22	1.00	0.00	X	317.73	Adipose	Adrenal gland	Pooled
12597	767721	AA417982	10.09	61.46	6.09	0.00	1.00	11	339.35	Foreskin	Pool	LID not found
12603	38883	R51305	2.72	30.69	11.37	0.00	4.00	3	419.03	Colon	Testis	Brain
12607	43966	H04828	24.05	401.19	16.68	4.00	5.00	18	358.39	Testis	Brain	Pool
12608	271744	N31585	5.54	56.56	10.21	0.00	1.00	4	427.39	Foreskin	-	Colon
12620	1492104	AA888148	521.50	2629.07	5.04	0.00	1.00	X	295.78	Ignore	Cervix	Head and neck
12623	43784	H05089	29.07	321.66	11.06	0.00	4.00	19	255.55	Heart	Brain	Lung
12630	785542	AA450336	14.39	104.77	7.28	1.00	0.00	14	214.37	Whole embryo	Uterus	Prostate
12631	43879	H05939	3.18	25.00	7.86	3.00	0.00			Brain	Testis	Lung
12638	785585	AA449444	4.74	110.99	23.41	7.00	0.00			Stomach	Whole embryo	Germ Cell
12641	754449	AA410298	16.42	91.22	5.56	0.00	2.00			Umbilical cord	Aorta	Thyroid
12659	39147	R51836	148.86	1173.53	7.88	0.00	2.00	2	412.17	Prostate	Foreskin	Kidney
12661	767823	AA418726	21.70	255.92	11.79	1.00	0.00	1	293.34	Umbilical cord	Pool	Muscle
12663	44154	H06154	10.97	59.93	5.46	1.00	0.00	9	358.65	Brain	Testis	Lung
12667	39265	R51871	95.00	662.13	6.97	2.00	0.00	9	256.34	Foreskin	Whole embryo	Kidney
12668	1492426	AA878576	17.62	166.98	9.48	6.00	0.00	19	76.13	Adipose	Pancreas	Placenta
12669	767843	AA418743	21.49	190.87	8.89	1.00	0.00			Pool	LID not found	Other
12680	415042	W93106	5.60	29.15	5.21	1.00	0.00			Pool	LID not found	Other
12682	742679	AA401376	3.93	47.69	12.13	3.00	0.00			Parathyroid	Pooled	Aorta
12683	280291	N47961	0.46	3.19	6.86	2.00	0.00			CNS	Kidney	LID not found
12692	343381	W67193	36.73	269.53	7.34	0.00	2.00	6	49.99	Heart	LID not found	Other
12694	504959	AA149051	17.89	264.79	14.80	2.00	0.00	11	343.65	Aorta	Uterus	Breast
12706	610883	AA172188	13.40	97.79	7.30	2.00	0.00	5	527.16	Neural	Thyroid	Brain
12715	281970	N48181	106.13	620.25	5.84	2.00	2.00	7	443.2	CNS	LID not found	Other
12732	342497	W68266	6.58	75.47	11.46	1.00	0.00			Heart	Lung	Tonsil
12734	593164	AA159600	73.46	401.27	5.46	1.00	0.00	5	527.79	Nose	Esophagus	Thymus
12742	951091	AA620458	22.43	115.93	5.17	0.00	1.00	1	131.82	Liver	CNS	Pancreas
12748	343569	W69435	6.28	43.64	6.95	0.00	2.00			Heart	LID not found	Other
12754	564771	AA136551	47.43	241.38	5.09	0.00	1.00	10	45	Aorta	Foreskin	Ear
12756	343930	W69774	9.59	220.63	23.01	1.00	0.00			Lung	Heart	Prostate
12760	358699	W94247	8.40	83.02	9.88	3.00	2.00			Heart	LID not found	Other
12762	838761	AA457670	7.49	49.22	6.57	1.00	1.00	19	103.68	Peripheral ner	Eye	Brain
12769	491712	AA150459	7.19	42.95	5.97	1.00	0.00			Testis	Uterus	LID not found
12771	253241	H89293	23.89	182.95	7.66	3.00	0.00	2	515.69	Ear	Bone	Colon
12782	795284	AA454016	5.64	30.64	5.44	1.00	0.00			Colon	Testis	LID not found
12783	324154	W46832	854.32	6022.66	7.05	2.00	0.00			Skin	-	Parathyroid
12784	244300	N54783	180.64	1483.66	8.21	1.00	2.00	1	209.39	Tonsil	Pool	LID not found
12788	294915	N71463	84.99	822.10	9.67	3.00	3.00			Tonsil	Pool	LID not found
12796	293444	N63696	15.24	95.62	6.27	3.00	0.00			Tonsil	Pool	LID not found
12797	595238	AA173430	6.79	94.50	13.92	13.00	2.00			Esophagus	Synovial mem	Thyroid
12800	841471	AA487241	117.25	1862.86	15.89	0.00	5.00			Lung	LID not found	Other
12802	758271	AA423978	5.49	212.28	38.64	1.00	0.00			Germ Cell	Testis	Pool
12815	342027	W60283	453.49	3690.52	8.14	2.00	0.00	X	245.06	Parathyroid	Pooled	Testis
12817	592777	AA156234	5.12	42.33	8.27	2.00	0.00	11	154.35	Stomach	Pancreas	Colon

Table 2A

12824	365085	AA024604	20.32	123.60	6.08	1.00	0.00	8	458.89	Parathyroid	Breast	Whole embryo
12828	898070	AA598779	14.30	83.74	5.86	2.00	0.00	6	21.48	Pooled	Gall bladder	CNS
12829	613070	AA181646	10.50	52.70	5.02	0.00	1.00			Cervix	Pool	LID not found
12833	591253	AA160780	43.19	237.96	5.51	0.00	1.00			Pancreas	LID not found	Other
12838	730772	AA436009	5.11	25.75	5.04	1.00	0.00			Testis	LID not found	Other
12840	210952	H56005	20.97	203.41	9.70	0.00	2.00			Pool	LID not found	Other
12841	592699	AA159962	4.03	26.45	6.57	1.00	0.00	6	510.58	Germ Cell	Pancreas	Testis
12858	773166	AA425665	301.81	2179.31	7.22	0.00	2.00	9	59.14	Whole embryo	Brain	LID not found
12861	625863	AA187641	28.78	381.61	13.26	8.00	0.00	1	174.53	Small intestine		Stomach
12862	795230	AA453598	2.51	17.74	7.08	2.00	0.00			Testis	Germ Cell	Whole embryo
12863	346119	W72749	8.06	111.90	13.89	4.00	4.00			Heart	Pool	LID not found
12866	780938	AA429804	17.60	277.80	15.78	2.00	0.00	4	682	Testis	LID not found	Other
12866	122762	T99719	1.12	5.67	5.07	1.00	0.00	4	350.76	Germ Cell	Pool	LID not found
12872	753028	AA436456	5.50	39.79	7.23	4.00	0.00			Pool	Uterus	Brain
12878	838611	AA456975	49.82	586.03	11.76	1.00	0.00	3	726.84	Peripheral ner	Adipose	Breast
12882	781482	AA432121	148.79	796.56	5.35	1.00	0.00	3	726.94			
12883	786037	AA448637	21.36	139.86	6.55	2.00	0.00			Cervix	Umbilical cord	Ovary
12889	250868	N23599	47.56	262.69	5.52	0.00	2.00	11	59.6	Foreskin	LID not found	Other
12900	128861	R10099	51.07	260.36	5.10	1.00	0.00			Pool	LID not found	Other
12908	196187	R91949	5.04	34.28	6.80	5.00	0.00	10	288.35	Testis	Pool	LID not found
12910	950596	AA608532	9.17	46.14	5.03	1.00	0.00			Uterus	Lung	Pool
12913	254549	N23867	146.51	1355.51	9.25	2.00	0.00			Nose	LID not found	Other
12914	782270	AA431736	4.74	35.69	7.53	1.00	0.00			Testis	LID not found	Other
12924	126490	R06618	17.70	108.45	6.13	1.00	0.00			Whole embryo	Pool	LID not found
12935	43729	H06195	58.56	309.94	5.29	0.00	1.00	7	640.65	CNS	Heart	Bone
12936	753113	AA400710	3.73	26.59	7.13	1.00	3.00			Uterus	Whole embryo	Pool
12939	796563	AA461486	348.66	2323.93	6.70	1.00	2.00	12	245.31	Colon	Pool	LID not found
12955	35481	R45592	5.81	830.35	142.87	5.00	1.00	8	438.11	Brain	Eye	Breast
12958	743441	AA609364	24.34	273.37	11.23	4.00	5.00			Testis	LID not found	Other
12964	1409509	AA868929	11.29	109.06	9.66	4.00	2.00	19	305.11	Omentum	Muscle	-
12965	813284	AA455933	3.00	32.09	10.71	0.00	1.00	11	386.46	Uterus	Foreskin	Pool
12968	30580	R42182	95.52	514.37	5.38	4.00	0.00	14	15.73	Esophagus	Placenta	Cervix
12968	267420	N24966	2.86	16.09	5.62	1.00	0.00	22	16.86	Stomach	Prostate	Foreskin
12970	788246	AA454085	4.29	26.53	6.18	1.00	0.00			Whole embryo	LID not found	Other
12973	813286	AA455934	4.73	52.97	11.20	4.00	1.00			Larynx	Esophagus	Blood
12976	267725	N25578	46.57	308.82	6.63	2.00	0.00			Bone	Liver	Adrenal gland
12983	809998	AA454854	11.58	1193.03	103.05	12.00	0.00	1	305.09			
12986	788309	AA450020	45.48	250.49	5.51	0.00	1.00	19	156.84	Thyroid	Ovary	Aorta
12988	1160618	AA877618	8.75	64.56	7.38	3.00	0.00	1	143.55	Colon	Testis	Prostate
12990	31195	R41911	3.79	21.94	5.79	2.00	0.00	19	278.61	Adipose	Gall bladder	Blood
12996	1160723	AA877845	23.81	186.20	7.82	3.00	0.00	22	89.05	Gall bladder	Stomach	Placenta
13008	290841	N71982	54.56	395.10	7.24	2.00	1.00	6	116.78	Thyroid	Foreskin	Gall bladder
13010	788355	AA453028	13.17	75.98	5.77	1.00	0.00			Lymph	Germ Cell	Tonsil
13012	1159963	AA877255	12.77	74.48	5.83	1.00	0.00			Ovary	Germ Cell	Lung
13020	1161013	AA877669	7.72	50.79	6.58	0.00	1.00			Pooled	Blood	Germ Cell
13028	24176	R39325	8.08	47.71	5.90	3.00	0.00	14	182.05	Adipose	Brain	Parathyroid
13032	259973	N32604	12.88	83.05	6.45	3.00	0.00	19	269.06	Pool	Whole embryo	Placenta
13043	669375	AA253464	53.71	588.53	10.96	0.00	1.00	10	318.05	Stomach	Uterus	-
13045	813414	AA456648	4.92	30.96	6.29	2.00	1.00			Pool	LID not found	Other
13046	31261	R42884	16.93	119.56	7.06	1.00	0.00	14	260.52	Bone	Brain	LID not found
13047	626987	AA190871	6.10	34.62	5.68	1.00	0.00	2	719.37	Cervix	LID not found	Other
13048	276982	N39229	41.72	266.76	6.39	1.00	0.00	16	194.76		Adrenal gland	CNS
13049	811895	AA454982	9.25	69.92	7.56	0.00	1.00	9	307.02	CNS	Uterus	Whole embryo
13051	669379	AA236798	12.50	64.40	5.15	1.00	0.00			Thyroid	Cervix	Lymph
13054	31475	R42871	2.18	15.53	7.14	1.00	0.00	18	477.66	Testis	Brain	LID not found

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13056	278243	N63575	18.60	108.80	5.74	0.00	3.00	15	43.88	Tonsil	CNS	Lymph
13060	291385	N72288	22.12	152.22	6.88	0.00	2.00	2	529.87	Foreskin	LID not found	Other
13068	291418	N72300	13.47	127.57	9.47	2.00	5.00			Foreskin	LID not found	Other
13072	310501	N98513	177.72	1041.01	5.86	1.00	2.00	X	93.95	-	LID not found	Other
13102	627272	AA191336	46.56	268.84	5.77	0.00	1.00			Cervix	Aorta	CNS
13106	627428	AA190313	136.16	1099.47	8.07	2.00	0.00			Cervix	Aorta	Foreskin
13118	298369	N74106	12.07	121.41	10.06	1.00	1.00			Whole embryo	Tonsil	Lung
13118	950451	AA599104	14.72	80.90	5.49	0.00	1.00	6	314.79	Breast	Whole embryo	Brain
13122	642762	AA486183	12.45	108.06	8.68	2.00	1.00	3	120.51	Stomach	Placenta	Whole embryo
13132	299498	N74958	102.71	549.69	5.35	1.00	2.00	17	377.63			
13151	276712	N34895	5.13	33.58	6.54	3.00	0.00			CNS	Testis	LID not found
13154	345847	W70342	46.21	450.94	9.76	0.00	3.00			Heart	LID not found	Other
13157	627555	AA192435	5.91	33.57	5.68	1.00	0.00			Adipose	Cervix	Germ Cell
13160	233246	H75776	223.17	1123.34	5.03	1.00	0.00	3	411.15	Pool	LID not found	Other
13164	744391	AA621201	4.51	30.27	6.72	0.00	4.00	2	93.04	Testis	LID not found	Other
13165	611209	AA176413	11.04	56.27	5.10	1.00	0.00			Muscle	Pancreas	LID not found
13166	742867	AA406210	3.59	21.13	5.89	0.00	2.00			Testis	LID not found	Other
13167	838855	AA481789	11.11	55.56	5.00	0.00	1.00			Eye	LID not found	Other
13168	209179	H62011	31.94	270.63	8.47	2.00	5.00	19	67.54	Pool	LID not found	Other
13171	772938	AA479928	3.55	21.65	6.09	0.00	1.00	3	583.17	Whole embryo	Heart	-
13178	210531	H65632	30.52	263.32	8.63	1.00	2.00	12	45.7	Pool	LID not found	Other
13183	838518	AA481729	12.87	94.65	7.36	1.00	0.00			Eye	LID not found	Other
13184	233644	H78999	70.37	392.13	5.57	1.00	0.00	3	332.38	Pool	LID not found	Other
13185	641386	AA487527	26.68	172.32	6.46	1.00	0.00	11	219.43	Smooth musc	Liver	Gall bladder
13194	418113	W90105	25.68	210.34	8.19	0.00	4.00			Pool	LID not found	Other
13200	241241	H81083	112.11	1388.49	12.37	0.00	3.00	11	69.08	Pool	LID not found	Other
13214	742952	AA405690	61.91	370.06	5.98	0.00	1.00	10	534.94	Testis	Pool	LID not found
13216	213575	H70163	25.89	244.04	9.43	2.00	0.00	1	82.43	Pool	LID not found	Other
13223	639545	AA489791	6.08	40.57	6.67	3.00	0.00			Eye	Lung	LID not found
13231	839837	AA489826	299.52	1733.60	5.79	2.00	0.00	20	117.11	Eye	LID not found	Other
13235	356940	W92738	20.51	137.42	6.70	0.00	4.00			Heart	LID not found	Other
13239	839855	AA489840	256.81	1713.76	6.67	1.00	0.00	20	21.6			
13245	260412	N47208	1.01	10.41	10.26	1.00	0.00					
13247	839894	AA490048	15.73	86.46	5.50	1.00	0.00			Eye	LID not found	Other
13252	43885	H05091	8.21	236.53	28.80	1.00	0.00	7	501.89	Brain	Prostate	-
13254	583929	AA169379	7.38	74.50	10.12	7.00	0.00	8	440.43	Blood	Lung	Ovary
13255	753248	AA406231	10.92	78.95	7.23	2.00	0.00	6	157.53	Brain	CNS	Bone
13258	291700	N73477	62.15	396.07	6.37	3.00	0.00			Tonsil	Foreskin	Kidney
13266	296022	N73571	26.65	229.65	8.62	0.00	5.00	2	567.26	Pool	LID not found	Other
13272	53110	R15832	42.32	280.27	8.62	0.00	1.00	11	276.14	Small intestine	Heart	Brain
13274	289402	N73807	666.09	4171.04	6.26	1.00	0.00	X	245.06	Aorta	Foreskin	Whole embryo
13276	813154	AA456289	40.77	304.93	7.48	1.00	0.00	1	171.28	Heart	CNS	Pool
13279	279388	N48698	16.16	348.36	21.55	18.00	1.00					
13280	31869	R43017	2.40	20.01	8.33	5.00	0.00	2	73.17	Brain	Lung	Pool
13282	296574	N73846	275.74	1853.58	6.72	1.00	0.00	X	245.06			
13283	1031027	AA609881	8.81	58.24	6.61	1.00	0.00			Testis	Pool	LID not found
13286	260273	H96229	12.65	91.65	7.25	0.00	3.00			Foreskin	LID not found	Other
13287	813811	AA447692	13.42	108.95	8.12	4.00	0.00	2	576.44	Pooled	Kidney	Whole embryo
13288	37539	R49045	2.29	22.48	9.80	4.00	0.00	7	152	Brain	LID not found	Other
13290	298719	N74042	45.55	408.68	8.97	0.00	4.00	8	278.48	Pool	LID not found	Other
13312	44073	H06508	2.56	13.02	5.09	1.00	0.00			Germ Cell	Brain	LID not found
13314	299412	N76101	47.58	341.66	7.18	0.00	1.00	10	529.52	Lung	LID not found	Other
13334	629863	AA219033	1.01	5.24	5.20	0.00	1.00					
13335	726703	AA398264	8.99	53.89	7.71	5.00	0.00			Parathyroid	Brain	CNS
13336	42824	R60170	2.41	261.02	108.17	6.00	3.00	9	256.24	Brain	Germ Cell	Colon

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13344	42271	R60328	0.77	4.76	6.15	2.00	0.00	17	528.04	Germ Cell	Brain	Lung
13348	1493160	AA878880	5.08	346.78	68.25	8.00	0.00	4	453.51	Neural	Smooth musc	Lymph
13358	785693	AA449329	4.07	43.91	10.80	4.00	0.00			Pooled	Whole embryo	Testis
13361	754485	AA410190	42.71	238.54	5.59	0.00	2.00			Foreskin	Pool	LID not found
13363	39288	R52347	57.51	470.44	8.18	2.00	5.00	8	438.5	Brain	LID not found	Other
13364	1326920	AA757351	11.31	96.68	8.55	0.00	1.00	2	590.63	Synovial mem	Whole embryo	Germ Cell
13368	1389373	AA844124	3.16	19.87	6.25	1.00	1.00	14	276.5	Parathyroid	Testis	Kidney
13370	726551	AA398112	7.11	36.98	5.20	1.00	0.00			Testis	Prostate	LID not found
13371	39191	R54444	3.66	37.45	9.69	2.00	0.00			CNS	Whole embryo	Prostate
13374	785699	AA449332	4.30	23.93	5.57	0.00	1.00			Whole embryo	Kidney	Lung
13375	44387	H06525	2.50	32.65	13.07	0.00	3.00	6	46.35	Breast	Brain	Parathyroid
13379	39311	R51361	3.51	22.87	6.51	1.00	0.00	9	53.37	Cervix	Whole embryo	Brain
13383	44300	H06377	16.57	188.06	11.35	4.00	0.00			Brain	LID not found	Other
13384	1389018	AA655158	3.96	23.98	6.06	1.00	0.00	17	380.79	Germ Cell	Heart	Kidney
13391	44409	H06385	115.41	597.95	5.18	0.00	2.00	3	65.25	Muscle	Blood	Foreskin
13400	1390860	AA844447	10.43	57.64	5.53	0.00	2.00	3	628.88	Parathyroid	Pool	LID not found
13403	39336	R51186	4.17	21.68	5.20	1.00	0.00	2	481.92	Liver	Brain	LID not found
13407	47916	H11968	110.56	679.82	6.15	0.00	4.00			Brain	LID not found	Other
13415	48238	H11987	15.27	136.40	8.93	1.00	1.00	2	521.56	Brain	LID not found	Other
13419	39453	R51631	16.07	85.66	5.33	0.00	1.00	2	554.85			
13423	48033	H11780	6.50	43.58	6.70	2.00	0.00			Pooled	Brain	Heart
13429	768018	AA418747	4.52	34.80	7.70	1.00	0.00			Germ Cell	Pool	LID not found
13430	785760	AA449686	0.57	6.37	11.27	0.00	1.00	1	118.74	Placenta	Breast	Uterus
13434	726595	AA397918	77.18	476.55	6.17	0.00	4.00			Testis	LID not found	Other
13439	48060	H11631	2.30	23.55	10.25	1.00	0.00	19	185.79			
13440	1405689	AA890663	26.65	221.88	8.33	0.00	1.00	11	277.15	Pancreas	Blood	Parathyroid
13443	277487	N56888	11.93	819.40	68.68	0.00	5.00			CNS	LID not found	Other
13444	344010	W70242	15.18	98.29	6.47	1.00	0.00			Whole embryo	Ovary	Heart
13448	358800	W94383	126.17	849.98	6.74	0.00	2.00			Eye	Heart	Pool
13455	278516	N62817	5.74	29.48	5.14	1.00	0.00	3	422.58	CNS	LID not found	Other
13460	344834	W70264	5.08	29.28	5.76	1.00	0.00			Germ Cell	-	Pool
13468	366209	AA062985	0.51	3.20	6.32	1.00	0.00			Pooled	Lung	Heart
13480	358872	W94820	48.66	327.02	6.72	0.00	2.00			Heart	LID not found	Other
13487	289742	N62969	12.56	78.05	6.21	4.00	0.00	7	564.37	CNS	LID not found	Other
13490	796916	AA463206	9.48	48.02	5.06	1.00	0.00	22	78.86	Parathyroid	Muscle	Foreskin
13504	415182	W95106	28.11	252.46	8.98	0.00	4.00			Kidney	Pool	LID not found
13512	842895	AA486427	53.22	527.31	9.91	0.00	3.00			Cervix	Testis	Pool
13537	591457	AA160692	2.97	29.46	9.91	4.00	0.00	14	282.48	Stomach	Pancreas	-
13538	773199	AA425700	11.48	64.37	5.61	0.00	1.00			Whole embryo	Pool	LID not found
13546	773392	AA425749	6.39	356.22	55.74	0.00	1.00			Whole embryo	Pool	LID not found
13550	795456	AA453823	51.11	410.59	8.03	3.00	2.00			Testis	Pool	LID not found
13552	510906	AA102223	291.83	2073.76	7.11	0.00	2.00			Blood	Colon	Lung
13553	592523	AA160484	12.82	122.27	9.54	1.00	0.00			Blood	Pancreas	LID not found
13560	564567	AA127395	99.85	1264.57	12.66	0.00	4.00			Ear	Ovary	Lung
13583	282827	H99704	345.70	2124.21	6.14	2.00	0.00			Aorta	Uterus	Placenta
13585	625693	AA186460	33.98	235.51	6.93	1.00	0.00	7	15.39	Umbilical cord	Pooled	Germ Cell
13568	566383	AA151775	10.08	184.20	18.27	4.00	0.00	1	192.24	Adipose	Uterus	Pool
13574	811572	AA464595	6.48	72.09	11.12	1.00	0.00	7	521.82	Pool	Ovary	LID not found
13585	593174	AA159605	58.02	510.35	9.11	1.00	5.00	19	112.29	Tonsil	Ovary	Kidney
13591	328889	W45453	5.14	45.23	8.79	1.00	0.00	16	474.37	Foreskin	Parathyroid	Thyroid
13592	642766	AA486185	73.63	573.11	7.78	0.00	4.00	22	136.79	Larynx	Cervix	Prostate
13594	773548	AA428179	130.11	1092.90	8.40	0.00	3.00	12	52.19	Blood	Ovary	Eye
13596	784005	AA443290	20.58	105.81	5.14	0.00	1.00	2	101.7	Brain	Muscle	Lymph
13600	120273	T96986	27.95	217.95	7.80	0.00	3.00			Ovary	Uterus	Brain
13604	132392	R26531	5.41	30.87	5.70	1.00	0.00	13	146.69	Ovary	Placenta	Pool

Table 2A

13605	627211	AA195398	15.59	130.75	8.39	0.00	2.00	1	689.77	Ignore	Umbilical cord	Bone
13617	593690	AA166695	15.84	91.98	5.88	1.00	0.00			Aorta	Ovary	Lung
13627	297830	N69962	207.98	1066.14	5.13	1.00	0.00	10	415.29			
13629	626851	AA191437	46.43	320.60	6.91	0.00	2.00			Ignore	Cervix	Lung
13632	240223	H89505	121.48	1329.27	10.94	0.00	4.00					
13633	269831	N24829	29.55	208.24	7.05	0.00	3.00	11	252.9	Foreskin	LID not found	Other
13638	743536	AA609422	17.04	97.59	5.73	1.00	0.00			Testis	LID not found	Other
13639	811943	AA455012	3.47	78.84	22.73	7.00	2.00	13	226.98	Pool	LID not found	Other
13640	753198	AA406348	12.53	92.49	7.38	1.00	1.00			Synovial mem	Skin	Germ Cell
13641	267085	N24848	0.76	4.02	5.30	1.00	0.00	10	104.49	Foreskin	Pool	LID not found
13645	279058	N51682	7.47	216.16	28.95	7.00	0.00			CNS	Pool	LID not found
13648	753213	AA406363	10.85	57.49	5.30	1.00	0.00	7	675.52	Parathyroid	Breast	Placenta
13649	268692	N25920	9.58	135.88	14.18	3.00	2.00	10	384.62	Foreskin	LID not found	Other
13655	796406	AA459944	6.00	40.35	6.72	2.00	0.00	10	438.89	Adipose	Ear	Foreskin
13656	753236	AA406373	14.78	77.18	5.22	1.00	0.00	6	117.99	CNS	Pooled	Germ Cell
13667	767425	AA417940	5.89	61.85	10.50	1.00	0.00			Uterus	Brain	Pool
13668	664975	AA194833	171.04	1259.80	7.37	1.00	0.00	3	714.15	Stomach	Pool	Heart
13672	753252	AA406233	49.91	667.44	13.37	3.00	0.00	17	321.66		Nose	Prostate
13681	255897	N27366	39.35	219.99	5.59	2.00	0.00	1	553.91	Nose	LID not found	Other
13687	34942	R43755	10.30	78.89	7.66	0.00	1.00	3	391.24	Adipose	Tonsil	Adrenal gland
13688	753278	AA411656	39.82	224.58	5.64	1.00	0.00					
13692	685082	AA194941	9.46	48.96	5.17	1.00	0.00	11	319.19	Tonsil	Brain	Pool
13698	784050	AA443719	982.58	5090.11	5.18	0.00	1.00			Whole embryo	LID not found	Other
13699	753940	AA478106	44.48	281.64	6.33	0.00	1.00	12	105.99	Ear	Germ Cell	Testis
13707	44287	H06249	3.13	21.70	6.94	1.00	0.00			Breast	Foreskin	Muscle
13713	270862	N29817	13.60	92.80	6.82	0.00	2.00	17	24.51	Pancreas	Foreskin	LID not found
13715	768997	AA424754	13.43	79.78	5.94	2.00	0.00	4	615.42	Ear	Cervix	Pool
13726	744436	AA621224	1.95	10.63	5.44	2.00	0.00			Testis	LID not found	Other
13730	788507	AA452572	22.85	134.85	5.90	2.00	0.00			Synovial mem	Foreskin	Lymph
13732	1161830	AA876021	6.33	57.78	9.12	4.00	0.00			Tonsil	Blood	Kidney
13735	783998	AA443284	10.23	78.18	7.64	1.00	0.00	9	64.24	Thymus	Whole embryo	CNS
13736	278430	N66104	7.57	40.01	5.28	1.00	0.00	2	500.76	Adrenal gland	Brain	CNS
13740	33827	R44741	0.43	5.12	11.96	2.00	0.00			Adrenal gland	Muscle	Cervix
13748	34149	R44762	2.78	15.74	5.65	1.00	0.00	14	173.12	Pooled	Brain	Pancreas
13754	788524	AA452801	9.32	239.92	25.75	4.00	0.00	14	14.91	CNS	Foreskin	Whole embryo
13755	681891	AA256176	2.45	15.40	6.29	1.00	0.00	8	404.08			
13758	31759	R43008	24.45	201.16	8.23	0.00	2.00			Muscle	Pancreas	Lung
13762	788541	AA452816	35.18	344.69	9.80	1.00	2.00			Placenta	Parathyroid	CNS
13770	788554	AA452822	178.95	917.74	5.13	1.00	0.00			Whole embryo	Blood	-
13774	31972	R43020	16.56	91.50	5.52	0.00	2.00	20	328.68			
13775	741988	AA402915	21.30	467.98	21.97	3.00	0.00	3	160.11	Larynx	Thyroid	Cervix
13783	773367	AA425664	3.82	39.16	10.61	1.00	0.00	22	-13.35	Ignore	Foreskin	CNS
13786	788558	AA452824	16.81	145.97	8.68	0.00	1.00			Aorta	CNS	Ovary
13789	813513	AA456093	6.55	75.47	11.53	0.00	2.00	18	287.82	Foreskin	Pooled	Pancreas
13794	788575	AA452877	8.67	100.11	11.55	3.00	0.00	10	362.35	CNS	Whole embryo	Pool
13800	324492	W51794	16.27	254.33	15.63	1.00	2.00	11	352.44	Larynx	-	Bone
13801	811954	AA456635	13.44	81.61	6.07	0.00	1.00					
13804	844816	AA773894	78.03	664.97	8.41	2.00	0.00					
13808	346009	W72140	13.64	176.48	12.94	2.00	0.00	21	242.21	Small intestine	Stomach	Germ Cell
13815	882522	AA676466	59.77	639.22	10.69	8.00	1.00			Cervix	Liver	Adipose
13820	858450	AA773983	3.25	27.09	8.33	1.00	0.00					
13822	34526	R44396	12.13	63.85	5.27	1.00	0.00	1	750.98	Skin	Placenta	Adrenal gland
13823	843388	AA469383	4.57	30.17	6.60	2.00	0.00	20	40.66			
13828	589027	AA149117	45.23	334.48	7.39	2.00	0.00	3	56.14	Umbilical cord	Pool	Kidney
13832	320425	W04695	48.73	322.51	6.62	0.00	4.00			Parathyroid	LID not found	Other

Table 2A

13842	566466	AA152340	22.14	132.95	6.01	1.00	0.00	16	191.21	Stomach	Pooled	Blood
13848	322447	W16425	12.79	103.45	8.09	0.00	3.00			Parathyroid	LID not found	Other
13855	276861	N34933	52.25	323.77	6.20	0.00	2.00	16	202.63	CNS	LID not found	Other
13860	299459	N76133	10.26	58.41	5.69	0.00	1.00			Heart	Whole embryo	Lung
13880	327480	W20462	2.66	63.69	23.95	5.00	0.00			Pooled	Kidney	Heart
13882	118049	T92200	209.53	1679.75	8.97	2.00	0.00	X	245.05	Lung	Pool	LID not found
13884	300000	N78889	87.83	683.58	7.78	0.00	2.00			Prostate	Lung	LID not found
13886	627833	AA186281	14.23	96.63	6.79	0.00	1.00			Cervix	Uterus	Kidney
13894	365508	AA009738	21.60	108.48	5.02	0.00	1.00	17	41.55	Stomach	Colon	Kidney
13896	327732	W23581	22.62	221.25	9.78	0.00	3.00			Heart	LID not found	Other
13914	429050	AA005135	5.20	41.95	8.06	1.00	0.00	6	522.76	Pool	LID not found	Other
13916	841280	AA487192	211.35	1651.17	7.81	0.00	2.00	12	277.57	Pooled	Placenta	Lung
13924	255285	N23885	8.13	70.09	8.62	1.00	0.00	3	537.66	Nose	Skin	Breast
13925	587430	AA132524	172.73	1402.32	8.12	2.00	0.00			Pool	Colon	LID not found
13926	743030	AA406061	0.96	5.95	6.17	1.00	0.00			Testis	LID not found	Other
13927	839903	AA490058	9.09	77.47	8.53	4.00	0.00			Eye	LID not found	Other
13928	244194	N51030	23.43	153.04	6.53	3.00	0.00	1	88.45			
13941	490991	AA120881	23.65	144.84	6.12	0.00	2.00			Uterus	Pool	LID not found
13945	487938	AA044741	167.46	911.37	5.44	0.00	1.00			Uterus	LID not found	Other
13947	360177	AA012911	21.41	146.56	6.85	3.00	0.00			Eye	LID not found	Other
13952	245324	N53458	10.77	57.25	5.32	0.00	1.00	5	504.31			
13955	360355	AA013353	3.93	24.42	6.21	3.00	0.00			Eye	LID not found	Other
13957	490188	AA121271	8.89	54.09	6.09	0.00	1.00	15	347.96	Uterus	Pool	LID not found
13959	490434	AA122079	5.27	254.25	48.25	3.00	0.00	4	646.75	Uterus	Pool	LID not found
13963	840503	AA485696	195.98	1064.67	5.43	1.00	0.00	12	101.74	Synovial mem	Foreskin	CNS
13965	489931	AA121516	102.71	588.75	5.73	0.00	3.00	X	76.07	Uterus	LID not found	Other
13968	246552	N57659	34.27	210.63	6.15	1.00	4.00	16	62.53	Pool	LID not found	Other
13969	487066	AA045300	66.72	1063.12	15.47	3.00	4.00			Lymph	Uterus	Kidney
13970	566508	AA146979	118.60	1091.03	9.18	0.00	3.00	15	164.8	Colon	Kidney	LID not found
13980	796095	AA460376	878.64	5263.63	5.99	2.00	0.00			Whole embryo	LID not found	Other
13986	592530	AA161161	16.12	84.13	5.22	1.00	0.00	10	426.76	Head and nec	Ear	Pancreas
13988	841474	AA487233	104.68	971.77	9.27	0.00	4.00	5	529.13			
13996	810209	AA464522	9.79	59.00	6.03	1.00	0.00			Spleen	Tonsil	Ovary
14005	511633	AA126958	14.97	204.49	13.66	1.00	0.00	9	121.06	Whole embryo	Colon	Pool
14006	809722	AA455483	1027.59	5797.16	5.64	2.00	0.00	22	71.14	Ovary	Colon	Lung
14016	233759	H64591	5.60	96.24	17.18	6.00	0.00	15	240.37	Ovary	Heart	Lung
14018	267864	N25650	473.66	6609.43	13.95	0.00	4.00	16	162.07			
14028	767206	AA424586	159.16	962.04	6.04	0.00	2.00	3	575.4	Esophagus	Adipose	Gall bladder
14040	29920	R42312	2.97	38.06	12.83	6.00	0.00			Eye	Spleen	Brain
14047	796448	AA459983	4.04	26.83	6.64	2.00	0.00	18	316.2	Eye	Umbilical cord	Ear
14051	1031182	AA609955	8.11	44.32	5.46	1.00	0.00			Testis	LID not found	Other
14058	306276	N90595	67.43	449.68	6.67	0.00	2.00			Parathyroid	LID not found	Other
14068	786550	AA452125	29.77	157.14	5.28	0.00	1.00	3	458.05			
14072	43532	H05535	5.44	33.82	6.22	1.00	1.00	1	126.05	Brain	LID not found	Other
14080	37310	R49597	7.33	920.13	125.57	22.00	4.00			Parathyroid	Pool	Brain
14082	308820	N92804	248.86	1489.62	5.99	0.00	1.00	2	743.9	Lung	LID not found	Other
14088	31979	R43026	67.40	515.85	7.65	0.00	2.00	12	229.98	Brain	LID not found	Other
14090	309838	N94447	13.45	89.90	6.68	0.00	1.00			-	LID not found	Other
14091	1032015	AA610016	14.20	118.15	8.32	0.00	1.00			Testis	LID not found	Other
14101	121154	T98935	18.25	192.86	11.87	7.00	1.00			Pool	LID not found	Other
14106	309119	N98238	122.99	755.21	6.14	0.00	2.00			Stomach	Lung	LID not found
14109	122752	T99043	76.46	740.06	9.68	0.00	4.00	6	495.58	Pool	LID not found	Other
14112	28737	R40835	3.96	45.19	11.40	1.00	0.00	3	455.09	Brain	LID not found	Other
14114	726596	AA398141	39.58	227.49	5.75	1.00	0.00	2	97.67	Adrenal gland	Foreskin	Placenta
14124	1468220	AA884897	15.84	88.89	5.56	0.00	1.00			Cervix	Tonsil	Prostate

Table 2A

14129	754582	AA406311	6.76	37.93	5.61	1.00	0.00	17	281.02	Lymph	Blood	Tonsil
14131	41869	R66436	2.46	39.09	15.90	2.00	0.00	4	168.31	Parathyroid	Pool	Prostate
14137	754588	AA406201	44.76	236.76	5.29	1.00	0.00	3	347.25	Bone	-	Germ Cell
14145	754591	AA406320	32.83	204.98	6.24	1.00	0.00	3	395.51	Pooled	Liver	Placenta
14156	1412238	AA844618	7.68	392.52	51.11	9.00	0.00			Salivary gland	Pancreas	Ear
14164	1412245	AA844831	4.94	164.96	33.42	2.00	0.00	7	592.03	Pancreas	Kidney	LID not found
14169	754653	AA411204	4.06	27.03	6.66	0.00	2.00			Blood	Lung	-
14172	1412300	AA844864	3.49	87.84	25.19	2.00	0.00	2	241.71	Pancreas	Small intestine	Colon
14174	785890	AA449362	89.12	457.43	5.13	1.00	0.00	15	323.47	CNS	Thyroid	Whole embryo
14177	754654	AA411607	0.75	15.53	20.78	3.00	0.00			Pooled	Foreskin	Tonsil
14190	785910	AA449481	10.64	216.84	20.38	0.00	3.00			Whole embryo	Lymph	Eye
14191	48887	H16098	15.52	103.43	6.66	2.00	2.00	3	145.08	Brain	LID not found	Other
14195	41913	R59608	1.02	7.88	7.72	2.00	0.00	2	-12.44	Brain	LID not found	Other
14198	785913	AA449490	20.80	104.27	5.01	0.00	1.00			Stomach	CNS	Kidney
14199	48610	H16179	1.79	29.99	16.80	1.00	0.00			Brain	LID not found	Other
14205	768264	AA424944	81.52	467.39	5.73	0.00	2.00			Pool	Kidney	LID not found
14207	48955	H16725	218.35	1424.49	6.52	0.00	3.00	3	410.63	Breast	Brain	LID not found
14208	446432	AA777551	1.24	9.58	7.71	2.00	0.00					
14222	587333	AA132887	155.88	1414.66	9.08	2.00	0.00			Muscle	Whole embryo	Lung
14232	359072	W92315	176.96	1345.43	7.60	2.00	0.00	9	357.99	Heart	LID not found	Other
14235	840726	AA487846	297.67	3930.50	13.20	1.00	0.00	2	668.62	Bone	Umbilical cord	Aorta
14236	344959	W72870	7.12	43.30	6.08	1.00	0.00			Kidney	Heart	LID not found
14238	564847	AA129217	6.16	71.52	11.61	1.00	0.00	7	504.11	Brain	Aorta	Lung
14242	897865	AA598640	11.91	93.68	7.87	1.00	1.00	X	83.98	Ear	Pooled	Whole embryo
14244	345118	W72920	4.98	35.24	7.07	1.00	0.00			Heart	Whole embryo	Kidney
14251	280466	N51585	102.34	542.72	5.30	0.00	1.00			CNS	Pool	LID not found
14254	838999	AA467297	192.85	1473.86	7.64	2.00	3.00	10	374.69	Eye	Aorta	CNS
14270	784154	AA432096	0.71	6.76	9.54	2.00	0.00			Pooled	Whole embryo	Colon
14274	730408	AA469964	27.95	179.30	6.41	2.00	0.00	3	200.65	Eye	Blood	Muscle
14295	278144	N63516	11.24	59.22	5.27	0.00	1.00			CNS	LID not found	Other
14299	283581	N50702	5.77	131.13	22.72	1.00	0.00			CNS	LID not found	Other
14300	344550	W73597	167.79	1041.92	6.21	1.00	0.00	22	37.19	Heart	LID not found	Other
14304	427754	AA002226	35.43	189.93	5.36	2.00	1.00			Pool	LID not found	Other
14307	291947	N73083	0.78	8.81	11.25	1.00	0.00	15	190.28			
14316	122008	T98355	20.15	102.07	5.07	0.00	1.00			Eye	Pool	-
14322	780944	AA429807	6.11	44.05	7.21	0.00	1.00			Testis	LID not found	Other
14324	122435	T99243	7.95	48.95	6.16	2.00	0.00			Pool	LID not found	Other
14325	757246	AA426026	10.03	103.98	10.37	0.00	3.00			Muscle	Prostate	Testis
14326	838230	AA456674	33.42	182.38	5.46	1.00	0.00	4	349.65	Eye	LID not found	Other
14328	241447	H90407	32.70	301.43	9.22	0.00	5.00	15	14.4	Pool	LID not found	Other
14331	255651	N27837	219.53	1509.71	6.88	3.00	0.00	22	88	Nose	LID not found	Other
14334	810964	AA459403	272.32	1472.70	5.41	0.00	3.00			Germ Cell	Kidney	Breast
14337	609521	AA167565	91.21	967.23	10.60	0.00	5.00			Eye	LID not found	Other
14342	795534	AA459649	11.43	68.92	5.85	0.00	1.00			Testis	Pool	LID not found
14345	609620	AA167589	57.11	556.26	9.74	0.00	3.00	5	57.43	Eye	LID not found	Other
14350	795580	AA459689	15.24	82.28	5.40	0.00	2.00	19	250.6	Testis	LID not found	Other
14352	586845	AA133554	1.26	12.98	10.13	3.00	0.00	20	120.04	Colon	Lung	LID not found
14353	610006	AA169173	7.02	51.88	7.39	3.00	0.00			Eye	LID not found	Other
14355	488555	AA047275	34.00	231.39	6.81	2.00	0.00	X	121.77	Stomach	Tonsil	Brain
14356	126540	R06754	136.48	920.17	6.74	0.00	2.00					
14360	347740	W81524	25.71	153.68	5.98	0.00	3.00			Lung	Heart	Colon
14367	429122	AA004803	6.43	41.25	6.41	1.00	0.00			Pool	LID not found	Other
14374	795794	AA459851	161.02	921.62	5.72	1.00	0.00	X	245.06	Testis	LID not found	Other
14381	629701	AA218673	138.33	845.72	6.11	1.00	0.00			Eye	Pool	LID not found
14384	744360	AA621183	9.34	61.28	6.56	0.00	1.00	21	154.34	Neural	Brain	Eye

Table 2A

14389	629885	AA219047	374.87	2265.82	6.04	1.00	1.00	3	697.77	Eye	LID not found	Other
14395	244050	N34042	1.92	23.21	12.07	4.00	0.00			Pool	LID not found	Other
14396	197102	R93409	5.52	34.05	6.17	1.00	0.00	2	75.2	Pool	LID not found	Other
14397	629907	AA219230	56.06	346.97	6.19	1.00	2.00			Eye	LID not found	Other
14401	257170	N30557	278.83	1681.08	6.03	0.00	2.00	1	589.13	Nose	Gall bladder	Adrenal gland
14421	283819	N52876	5.54	31.91	5.76	1.00	0.00			CNS	LID not found	Other
14422	744611	AA621294	5.12	26.38	5.15	1.00	0.00			Testis	LID not found	Other
14428	665316	AA195318	48.96	282.39	5.77	1.00	0.00			Colon	Heart	Pool
14431	811907	AA454654	5.76	71.10	12.34	5.00	0.00			Larynx	Skin	Umbilical cord
14434	795376	AA453494	25.62	163.18	6.37	0.00	2.00			Testis	LID not found	Other
14435	753633	AA478596	22.78	183.14	8.04	2.00	0.00	8	477.99		Pancreas	Kidney
14437	283682	N52935	5.72	32.83	5.74	1.00	0.00			CNS	LID not found	Other
14439	812074	AA455988	4.75	98.82	20.82	5.00	1.00			Brain	Liver	Kidney
14440	753376	AA411685	5.97	107.04	17.94	8.00	1.00			Pancreas	Ovary	Tonsil
14444	665379	AA194993	8.93	53.68	6.01	1.00	0.00	6	19.39			
14445	283688	N52938	165.50	830.04	5.02	1.00	0.00	9	355.78	CNS	LID not found	Other
14446	199635	R96522	9.36	132.05	14.11	0.00	1.00	19	247.56	Placenta	Pool	Aorta
14463	35329	R45517	7.90	45.38	5.75	1.00	0.00	5	527.16	Neural	Thyroid	Brain
14465	243477	N33610	4.20	21.76	5.18	1.00	0.00	10	372.38	Pool	LID not found	Other
14466	811503	AA454616	110.50	665.02	6.02	1.00	0.00			Ovary	LID not found	Other
14467	752636	AA419603	104.16	731.42	7.02	0.00	2.00	15	118.58	Thyroid	Pooled	Pancreas
14474	809863	AA455130	6.71	82.04	12.22	2.00	0.00			Ovary	LID not found	Other
14476	665445	AA185080	38.85	203.49	5.26	1.00	0.00	3	20.26	Thymus	Pooled	CNS
14477	247265	N54061	32.56	190.33	5.85	0.00	3.00	4	450.16	Pool	LID not found	Other
14480	753596	AA478717	9.78	72.82	7.45	1.00	3.00			Pool	LID not found	Other
14486	731469	AA412417	10.58	79.67	7.53	3.00	0.00	11	271.39	Eye	Head and nec	Brain
14490	838776	AA457576	0.91	4.90	5.40	2.00	0.00			Eye	LID not found	Other
14491	34869	R44447	1.53	15.24	9.96	1.00	1.00	3	472.27	Brain	Blood	Prostate
14493	247698	N54274	499.66	2822.94	5.65	1.00	1.00	1	628	Pool	LID not found	Other
14495	37823	R59473	0.88	7.17	8.15	2.00	0.00	4	639.11	Pooled	Germ Cell	
14498	788641	AA449832	8.34	105.02	12.59	3.00	0.00					
14499	682072	AA256464	22.68	156.78	6.91	0.00	4.00	8	470.89	Uterus	Brain	Pool
14500	624744	AA187143	4.57	87.39	19.10	3.00	5.00	7	94.72	Cervix	Umbilical cord	Pooled
14502	34745	R44409	3.15	140.66	44.61	5.00	0.00	14	82.24	Brain	LID not found	Other
14505	811983	AA456854	35.57	188.88	5.31	0.00	1.00	10	250.29			
14506	788687	AA449847	9.99	66.23	6.63	1.00	0.00			Whole embryo	LID not found	Other
14508	625011	AA181023	9.30	735.73	79.13	22.00	3.00	3	628.88	Adipose	Umbilical cord	Pancreas
14510	34868	R44428	3.74	24.36	6.52	1.00	0.00			Colon	Brain	LID not found
14511	897768	AA598507	3.33	24.03	7.22	3.00	0.00			Head and nec	Esophagus	Pancreas
14512	345077	W72310	13.03	115.35	8.86	1.00	0.00	7	675.52	Head and nec	Adrenal gland	Brain
14522	796395	AA459949	26.52	173.44	6.54	0.00	3.00	22	37.19	Foreskin	Pancreas	Pool
14526	34901	R45114	29.49	356.01	12.07	2.00	0.00	20	329.54	Thymus	Bone	Foreskin
14528	366518	AA026805	32.72	192.07	5.87	1.00	0.00	9	422.75	Gall bladder	Spleen	Skin
14529	812012	AA455862	6.67	52.07	7.81	1.00	0.00	X	141.57	Peripheral ner	Tonsil	Colon
14536	377468	AA055440	34.43	282.70	8.21	1.00	1.00	4	562.82	Adipose	Gall bladder	Breast
14544	378955	AA778392	227.49	1482.41	6.52	1.00	0.00					
14552	378461	AA775616	21.01	1900.75	90.45	18.00	1.00					
14569	812053	AA455980	8.88	56.95	6.41	3.00	0.00	21	217.43	Cervix	Foreskin	Lymph
14580	1155071	AA706301	6.78	43.53	6.42	1.00	0.00					
14584	385003	AA709143	165.20	1387.94	8.40	0.00	2.00					
14585	812069	AA455994	20.32	132.57	6.53	0.00	1.00			Neural	Pooled	Tonsil
14590	35300	R43798	24.85	258.12	10.30	5.00	1.00	5	626.75	Eye	Parathyroid	Brain
14600	594693	AA185313	13.11	78.61	5.99	1.00	0.00			Pooled	Prostate	Ovary
14618	797057	AA463249	234.02	1488.72	6.35	0.00	2.00	2	294.33	CNS	Blood	Parathyroid
14620	643251	AA488646	104.73	726.20	6.93	5.00	0.00	2	194.51			

Table 2A

14624	326287	W31919	7.82	216.57	27.71	1.00	2.00			Pancreas	LID not found	Other
14628	784142	AA432081	230.65	1953.21	8.47	0.00	2.00	3	433.36	Esophagus	Parathyroid	Whole embryo
14636	950924	AA608729	473.36	3028.61	6.40	1.00	0.00	12	246.58			
14644	565110	AA128462	37.94	398.16	10.49	0.00	2.00	7	148.92	Lung	Pool	LID not found
14654	490965	AA120866	19.58	426.06	21.76	9.00	0.00			Stomach	Pooled	Prostate
14659	784272	AA447476	21.78	111.38	5.11	1.00	0.00			Pool	LID not found	Other
14662	595200	AA173411	31.84	193.81	6.09	1.00	0.00			Small intestine	Thyroid	Uterus
14666	119330	T94556	10.77	55.94	5.19	1.00	0.00	22	98.66	Lung	LID not found	Other
14675	285760	N84145	243.53	1407.07	5.78	2.00	0.00			Ear	Foreskin	LID not found
14679	757337	AA437099	6.87	45.66	7.62	2.00	0.00	3	173.27	CNS	Muscle	Parathyroid
14684	272552	N35894	308.13	1763.62	5.72	1.00	1.00	X	245.06	Aorta	Foreskin	Whole embryo
14686	566501	AA151917	27.97	140.21	5.01	0.00	1.00	14	123.62	Placenta	Colon	Heart
14687	277083	N39603	24.91	132.91	5.33	1.00	0.00	6	546.25	CNS	LID not found	Other
14688	322033	W37833	18.28	93.04	5.09	0.00	1.00	5	530.53	Parathyroid	LID not found	Other
14696	121580	T97921	48.76	449.24	9.21	0.00	2.00					
14702	730742	AA435988	5.55	33.55	6.05	1.00	0.00			Testis	LID not found	Other
14704	757205	AA443978	15.48	179.89	11.62	4.00	0.00					
14715	489109	AA056484	33.07	172.99	5.23	1.00	0.00			-	Prostate	Uterus
14719	840470	AA485869	6.15	45.03	7.32	2.00	0.00			Lung	LID not found	Other
14727	840514	AA485969	154.76	1177.04	7.61	2.00	0.00			Lung	LID not found	Other
14729	510397	AA053682	24.74	130.91	5.29	2.00	0.00			Colon	LID not found	Other
14731	897722	AA598983	9.99	65.30	6.54	1.00	0.00	17	330.19	CNS	Pooled	Foreskin
14735	843058	AA488604	4.62	61.72	13.36	6.00	0.00			Cervix	Uterus	Testis
14736	111735	T91098	8.14	59.84	7.35	1.00	0.00					
14743	843278	AA488659	15.07	133.96	8.89	2.00	3.00			Cervix	Pool	Brain
14749	564698	AA129318	8.82	49.54	5.62	0.00	1.00	3	654.24	CNS	Kidney	Whole embryo
14755	594946	AA172039	23.27	150.86	6.48	0.00	1.00	11	277.15	Cervix	Blood	Aorta
14760	147834	R81831	45.68	337.10	7.38	4.00	0.00	20	327.49	Skin	Prostate	Pancreas
14766	731445	AA412443	4.24	45.21	10.65	2.00	0.00			Testis	Ovary	Pool
14770	796227	AA460669	9.45	56.30	5.96	0.00	1.00			Adipose	Testis	Whole embryo
14772	839037	AA487501	20.39	289.95	14.22	4.00	5.00			Neural	Eye	Pool
14773	526567	AA128407	3.24	75.85	23.42	8.00	0.00	11	22.62	Pancreas	Blood	Colon
14775	841016	AA486858	25.12	128.29	5.11	1.00	0.00	3	149.53	Lung	LID not found	Other
14784	122872	R00130	177.91	1531.72	8.61	1.00	2.00	1	719.04			
14793	1031580	AA609310	42.09	239.38	5.69	1.00	0.00			Muscle	Testis	LID not found
14794	327748	W23441	50.53	342.75	6.78	0.00	4.00	17	347.4	Heart	LID not found	Other
14797	126549	R06860	240.13	1258.08	5.24	1.00	0.00	680.45	Hs.163751	Pool	LID not found	Other
14802	321310	W32192	12.17	62.64	5.15	0.00	1.00			Parathyroid	LID not found	Other
14808	35285	R45579	63.13	333.15	5.28	0.00	1.00			Adipose	Brain	LID not found
14810	324111	W46575	69.62	540.10	7.76	0.00	2.00			-	LID not found	Other
14813	127192	R08260	30.57	211.52	6.92	0.00	3.00	9	385.62	Pool	LID not found	Other
14814	267865	N25657	171.67	1025.19	5.97	0.00	2.00	2	110.93	Small intestine	Adipose	Gall bladder
14816	37367	R49650	4.06	26.62	6.55	1.00	0.00			Brain	Prostate	LID not found
14817	244859	N54925	207.89	1211.40	5.83	0.00	2.00			Pool	LID not found	Other
14818	340737	W56308	211.56	1740.75	8.23	0.00	2.00	14	151.92	Foreskin	Muscle	Heart
14819	1030855	AA621761	73.00	963.30	13.20	2.00	1.00			Testis	LID not found	Other
14824	44156	H06157	2.53	22.90	9.06	2.00	0.00	1	21.19	Brain	Pancreas	LID not found
14825	265845	N25336	300.18	2126.96	7.09	2.00	0.00			Foreskin	LID not found	Other
14826	133647	R27619	7.30	81.73	11.20	1.00	0.00	5	640.93	Parathyroid	Placenta	Foreskin
14832	31564	R42056	10.98	354.13	32.25	2.00	0.00	4	96	Parathyroid	Pancreas	Brain
14833	276387	N40180	8.17	45.40	5.55	1.00	0.00			CNS	LID not found	Other
14837	129777	R16983	73.32	449.88	6.14	0.00	1.00			Pool	LID not found	Other
14840	37814	R59355	3.76	22.23	5.91	1.00	0.00	7	88.95	Brain	Pool	LID not found
14842	339179	W60473	7.04	70.55	10.03	6.00	0.00			Pooled	Germ Cell	Pancreas
14845	130392	R21741	175.15	2089.40	11.93	0.00	2.00			Placenta	LID not found	Other

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14849	278137	N63520	15.76	89.85	5.70	0.00	1.00			CNS	LID not found	Other
14851	1030959	AA620359	6.27	43.04	6.86	1.00	0.00			Testis	LID not found	Other
14852	115277	T86932	8.24	101.29	12.29	0.00	1.00	14	231.66	Thyroid	Pancreas	Whole embryo
14858	343174	W67536	7.55	67.51	8.94	7.00	0.00			Uterus	Heart	Pool
14866	343235	W67368	545.65	4144.44	7.60	2.00	0.00	X	245.06			
14867	1049168	AA620669	7.76	69.08	8.90	0.00	1.00			Testis	LID not found	Other
14872	38887	R51514	2.01	16.57	8.24	3.00	0.00			Brain	Testis	Pool
14876	785694	AA449321	9.14	59.24	6.48	1.00	0.00	9	367.95	Whole embryo	Heart	Germ Cell
14878	281659	N48050	8.44	62.82	7.44	1.00	0.00	2	577.82	Thyroid	Stomach	Testis
14902	786053	AA448653	10.04	59.29	5.90	1.00	0.00	7	683.81	Gall bladder	CNS	Pool
14904	450574	AA704255	5.74	35.34	6.16	2.00	0.00					
14906	726695	AA398365	26.86	179.72	6.69	1.00	0.00			CNS	Tonsil	Eye
14907	42302	R61700	114.02	598.02	5.23	1.00	0.00	2	29.21	Brain	LID not found	Other
14912	451504	AA707321	55.57	366.48	6.60	2.00	0.00					
14913	787113	AA424537	12.07	124.06	10.28	0.00	2.00			Pool	Colon	LID not found
14916	1416782	AA694557	33.94	495.07	14.59	4.00	2.00	14	276.5	Marrow	Smooth musc	Esophagus
14921	767126	AA424534	7.93	41.85	5.28	0.00	1.00			Parathyroid	Pool	Kidney
14924	1434948	AA857131	37.40	224.00	5.99	2.00	0.00	X	319.81	Esophagus	Synovial mem	Ovary
14928	452588	AA778919	2.59	16.03	6.19	3.00	0.00					
14930	726709	AA398267	3.56	21.44	6.02	2.00	0.00			Testis	Brain	Colon
14931	42330	R61187	34.27	171.71	5.01	1.00	0.00	14	43.69	Brain	LID not found	Other
14932	1434905	AA857101	4.95	280.19	56.56	10.00	0.00			Larynx	Blood	Cervix
14935	647444	AA199666	38.81	272.37	7.02	2.00	0.00			Testis	Brain	LID not found
14947	42660	R61231	2.54	14.11	5.56	1.00	0.00			Brain	LID not found	Other
14955	42452	R61297	668.79	3511.35	5.25	1.00	0.00	6	309.19	Brain	LID not found	Other
14957	768417	AA495835	10.49	66.32	6.32	0.00	1.00			Adipose	Pooled	Foreskin
14958	786154	AA448855	3.25	16.48	5.08	0.00	1.00	3	209.23	Muscle	Whole embryo	Pool
14968	482595	AA705112	9.99	89.27	8.94	2.00	0.00					
14969	767176	AA424562	11.40	105.55	9.26	4.00	0.00	17	53.69	Lung	Placenta	Ovary
14970	726731	AA398285	127.67	879.81	6.89	2.00	0.00			Testis	LID not found	Other
14982	345761	W72671	5.80	43.08	7.43	3.00	0.00			Germ Cell	Testis	Prostate
14984	427877	AA001879	200.05	1430.29	7.15	2.00	0.00			Pool	LID not found	Other
14987	283744	N50740	9.51	57.47	6.05	1.00	0.00			CNS	Prostate	Tonsil
14996	346366	W74257	24.68	156.07	6.32	0.00	2.00	14	192.96	-	Heart	LID not found
14998	898050	AA598947	265.59	1540.53	5.80	1.00	0.00	3	440.21	Cervix	Whole embryo	Ovary
15004	358217	W95636	11.19	145.79	13.03	3.00	0.00	X	316.03	Heart	Germ Cell	Uterus
15011	281934	N51068	11.16	118.67	10.63	1.00	0.00	10	381.7	CNS	LID not found	Other
15012	346523	W73994	6.08	33.18	5.46	0.00	1.00			Heart	LID not found	Other
15016	427897	AA001924	15.96	118.08	7.40	4.00	0.00	17	482.18	Pool	LID not found	Other
15038	212784	H69691	321.40	1984.75	6.18	2.00	1.00					
15039	277871	N64198	30.02	151.32	5.04	0.00	1.00			CNS	LID not found	Other
15040	784183	AA446661	21.16	207.35	9.80	0.00	1.00	17	366.05	Smooth musc	Germ Cell	Whole embryo
15046	255295	N23717	947.64	6391.17	6.74	1.00	0.00	4	445.66	Nose	LID not found	Other
15048	428592	AA004887	5.52	44.94	8.14	2.00	0.00			Pool	LID not found	Other
15055	839527	AA491457	3.26	19.72	6.05	1.00	0.00	3	461.43	Eye	Ear	Prostate
15073	594063	AA169840	36.84	185.56	5.04	0.00	1.00	2	128.34	Ovary	LID not found	Other
15084	591814	AA143467	21.11	117.03	5.54	2.00	0.00	17	98.53	Pancreas	Colon	Heart
15085	629994	AA219172	31.32	237.88	7.60	0.00	2.00	4	301.37	Eye	LID not found	Other
15087	213464	H72232	713.96	3660.65	5.13	1.00	0.00	6	627.09	Pool	LID not found	Other
15101	638653	AA461788	88.62	729.33	8.23	2.00	0.00	16	426.28	Tonsil	Eye	LID not found
15113	594684	AA171760	8.39	166.58	19.86	16.00	2.00			Stomach	Colon	Pancreas
15114	782171	AA431210	6.49	32.60	5.02	0.00	1.00			Testis	LID not found	Other
15121	594758	AA172056	19.89	233.32	11.73	3.00	0.00			Cervix	Ovary	Testis
15133	744605	AA621291	10.20	61.19	6.00	1.00	0.00			Cervix	Testis	Breast
15140	213682	H72279	22.29	184.56	8.28	2.00	0.00					

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15142	795887	AA460147	9.82	51.11	5.20	1.00	0.00			Testis	LID not found	Other
15143	345711	W71994	18.21	123.62	6.79	0.00	1.00	1	27.1	Synovial mem	Pooled	Breast
15147	290227	N62271	86.33	506.21	5.86	2.00	0.00			CNS	Tonsil	LID not found
15153	609950	AA174106	5.49	30.43	5.54	2.00	0.00			Eye	LID not found	Other
15154	782499	AA431771	62.94	340.33	5.41	1.00	0.00			Testis	LID not found	Other
15155	288961	N62712	27.25	139.37	5.11	1.00	0.00	7	424.67	CNS	LID not found	Other
15156	566440	AA148862	21.48	150.53	7.01	2.00	0.00	12	487.5	Stomach	Uterus	Muscle
15165	838478	AA457517	36.06	285.86	7.93	2.00	0.00	8	437.97	Salivary gland	Adipose	CNS
15167	897422	AA489463	24.33	173.86	7.15	0.00	1.00	4	85.75	CNS	Spleen	Lung
15171	27404	R40031	3.13	16.95	5.42	2.00	0.00	7	672.07	Germ Cell	Eye	-
15176	753626	AA479952	11.24	57.94	5.15	1.00	0.00	18	66.61	Pooled	Foreskin	Pool
15182	796328	AA461317	128.49	663.48	5.32	0.00	1.00	X	245.06	CNS	Whole embryo	LID not found
15190	814266	AA458993	8.18	43.55	5.32	1.00	0.00	1	15.07	Neural	Pooled	Placenta
15191	753386	AA410345	16.00	85.86	5.37	1.00	0.00			Pooled	Pancreas	Kidney
15205	245883	N55361	140.20	742.30	5.29	1.00	0.00	5	337.25	Spleen	CNS	Tonsil
15208	753684	AA408599	17.20	93.81	5.45	0.00	1.00	11	339.35	Placenta	Parathyroid	Foreskin
15215	813169	AA456318	14.56	80.68	5.54	1.00	0.00			Muscle	Kidney	-
15223	752625	AA419608	24.86	180.85	7.27	1.00	1.00	8	65.2	Parathyroid	Nose	CNS
15225	243347	N38960	27.02	192.04	7.11	0.00	1.00	14	179.2	Pool	LID not found	Other
15229	277327	N57483	1.22	7.21	5.93	1.00	0.00	21	164.67	CNS	LID not found	Other
15231	767082	AA424511	7.92	44.22	5.58	0.00	1.00			Pool	LID not found	Other
15241	277039	N38577	54.60	329.80	6.04	0.00	3.00			CNS	LID not found	Other
15243	665385	AA195021	55.26	280.51	5.07	0.00	1.00	17	403.8	Pancreas	Cervix	Umbilical cord
15247	726483	AA399269	38.53	317.18	8.23	0.00	1.00			Uterus	Pool	LID not found
15261	247177	N57006	14.34	133.20	9.29	1.00	1.00			Pool	LID not found	Other
15262	788155	AA461090	200.57	1105.18	5.51	2.00	2.00			Whole embryo	LID not found	Other
15265	812098	AA456001	7.45	89.03	11.96	2.00	0.00			Kidney	Germ Cell	Ovary
15268	187814	R83757	9.04	76.31	8.44	3.00	0.00	4	623.42	Umbilical cord	Germ Cell	Foreskin
15292	1091543	AA599311	325.85	2096.08	6.43	2.00	0.00	16	349.34	Skin	Cervix	Bone
15294	35147	R45550	10.94	67.12	6.14	0.00	1.00	2	554.03	Brain	LID not found	Other
15317	813719	AA453779	12.45	1464.63	117.63	11.00	0.00			Muscle	Heart	Testis
15318	35612	R45627	242.87	1224.71	5.04	1.00	0.00	X	246.7	Brain	Lung	LID not found
15323	768421	AA495835	21.43	159.27	7.43	0.00	5.00			Pool	LID not found	Other
15334	35729	R45692	4.13	25.72	6.23	1.00	0.00	1	633.69	Lung	Brain	LID not found
15335	1459234	AA865729	11.33	137.74	12.15	1.00	0.00	X	83.98	Skin	Germ Cell	Colon
15337	812172	AA456036	8.01	50.35	6.29	1.00	0.00			Tonsil	Testis	Pool
15341	813748	AA453802	0.73	8.15	11.15	1.00	0.00					
15345	812175	AA456044	9.40	73.50	7.82	1.00	4.00			Foreskin	Pool	LID not found
15348	214008	H70775	16.72	138.19	8.26	3.00	0.00	6	104.03			
15362	626348	AA188653	11.81	225.11	19.06	3.00	1.00	7	653.71	Cervix	Placenta	Pancreas
15363	266697	N22897	248.26	1302.54	5.25	2.00	0.00			Foreskin	LID not found	Other
15372	300024	N78903	16.17	81.94	5.07	0.00	1.00	1	174.53	Umbilical cord	Ear	Thymus
15376	321958	W37733	122.09	1402.23	11.48	0.00	2.00	19	102.24	Parathyroid	LID not found	Other
15388	289168	N68970	56.84	462.61	8.14	0.00	2.00	X	245.06	CNS	LID not found	Other
15394	841670	AA487563	14.61	95.54	6.54	0.00	4.00			Lung	Tonsil	LID not found
15402	627401	AA190825	6.03	115.96	19.22	5.00	0.00	5	481.83	Lymph node	Head and nec	CNS
15403	254562	N23651	9.45	74.55	7.89	1.00	0.00			Nose	Aorta	Heart
15404	291891	N73011	28.77	302.90	10.53	0.00	1.00	19	157.82	Foreskin	Spleen	Adrenal gland
15408	322926	W45026	480.32	2443.33	5.09	0.00	1.00	8	474.75	-	Whole embryo	LID not found
15430	488499	AA047462	34.02	205.07	6.03	0.00	1.00	10	460.41	Placenta	CNS	Bone
15432	592771	AA159994	6.15	37.15	6.04	1.00	0.00			Larynx	Pancreas	Blood
15439	282475	N49850	31.28	235.84	7.54	0.00	4.00	4	670.02	CNS	Pool	LID not found
15440	323269	W42746	6.70	34.87	5.20	0.00	1.00			CNS	-	Ovary
15444	305481	N89812	9.73	54.67	5.62	0.00	1.00			Parathyroid	Ovary	Heart
15451	254694	N25049	42.24	252.71	5.98	2.00	0.00	17	281.02	Nose	LID not found	Other

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15455	280529	N88001	141.95	761.82	5.37	0.00	1.00	1	142.28	CNS	LID not found	Other
15459	503583	AA131240	6.48	32.95	5.10	0.00	1.00	4	201.92	Adrenal gland	Whole embryo	Uterus
15468	950098	AA598402	109.03	774.36	7.10	2.00	0.00			Colon	Pancreas	Parathyroid
15470	730150	AA412497	27.98	416.52	14.89	2.00	0.00	2	96.76	Testis	LID not found	Other
15471	839009	AA487301	88.88	665.29	7.49	0.00	2.00			Eye	LID not found	Other
15472	135811	R33363	25.44	184.28	6.46	1.00	0.00	10	254.93		Esophagus	Umbilical cord
15475	503675	AA131450	20.94	212.25	10.14	5.00	2.00			Aorta	Uterus	LID not found
15477	565693	AA133395	5.88	59.67	10.14	2.00	0.00	18	22.88	Lung	LID not found	Other
15481	509463	AA056383	205.97	1587.83	7.71	0.00	2.00	5	501.96	Colon	LID not found	Other
15484	897773	AA598515	26.51	205.12	7.19	0.00	2.00			Kidney	LID not found	Other
15487	344108	W73781	17.91	131.93	7.37	0.00	1.00			CNS	Heart	-
15503	839048	AA487505	9.38	69.52	7.41	2.00	0.00	11	373.42			
15509	512116	AA133590	17.48	389.56	22.29	6.00	0.00	X	245.06	Aorta	Foreskin	Whole embryo
15511	328813	W45285	1.68	9.97	5.95	1.00	1.00			Parathyroid	Pancreas	Eye
15524	123735	R01179	136.20	1539.66	11.30	0.00	3.00	9	356.18	Pool	Brain	LID not found
15531	591116	AA158352	35.03	255.97	7.31	2.00	0.00			Adipose	Pancreas	Blood
15533	784216	AA446866	0.52	2.97	5.74	1.00	0.00	X	350.62	Whole embryo	Colon	LID not found
15536	206666	H60999	10.24	75.93	7.42	0.00	1.00			Pool	LID not found	Other
15547	593638	AA166743	1276.25	6957.63	5.45	1.00	0.00			Breast	Parathyroid	Ovary
15568	37671	R61377	32.33	209.42	6.48	1.00	0.00	18	247.79	Foreskin	Brain	Breast
15569	292399	N66399	28.25	229.05	8.11	1.00	1.00	6	117.83	Pool	LID not found	Other
15570	347472	W81229	47.38	255.92	5.40	0.00	3.00			Kidney	Heart	LID not found
15573	138281	R66013	133.56	803.60	6.02	2.00	0.00	1	174.53	Placenta	LID not found	Other
15577	201422	R99092	13.59	96.24	7.08	0.00	3.00			Pool	LID not found	Other
15578	416309	W86185	23.55	125.82	5.34	1.00	0.00			Kidney	Testis	Pool
15585	505341	AA156235	154.72	856.78	5.54	0.00	2.00	6	137.8	Uterus	LID not found	Other
15592	30459	R42143	3.57	25.47	7.13	1.00	0.00	6	308.44	Germ Cell	Brain	Testis
15593	241705	H91680	81.33	576.55	7.09	1.00	0.00				Thymus	Adrenal gland
15600	44303	H06380	6.73	36.27	5.39	1.00	0.00	20	309.22	Brain	Lung	Breast
15613	195988	R91401	835.50	4242.62	5.08	1.00	0.00	11	367.35	Pool	LID not found	Other
15617	123326	R00311	46.42	442.67	9.54	0.00	4.00			Pool	LID not found	Other
15623	666492	AA233070	21.53	173.65	8.06	1.00	0.00	20	12.07	Nose	Adrenal gland	Brain
15625	415165	W93407	158.31	1364.45	8.62	0.00	4.00	17	375.84	Pool	LID not found	Other
15626	416557	W86992	41.06	320.75	7.81	0.00	3.00			Pool	LID not found	Other
15627	1049321	AA620783	1.42	8.88	6.24	1.00	0.00			Testis	LID not found	Other
15630	309224	N93853	47.04	300.26	6.38	0.00	1.00	1	620.01	Lung	LID not found	Other
15635	1055497	AA620794	13.77	107.83	7.83	1.00	5.00			Testis	LID not found	Other
15636	753038	AA436460	11.97	69.74	5.82	1.00	0.00			Brain	Breast	Uterus
15637	200417	R97240	389.23	2400.79	6.17	2.00	1.00	19	281.83	Pool	LID not found	Other
15645	201551	R97970	1160.17	5935.08	5.12	1.00	0.00	X	245.06	Pool	LID not found	Other
15648	306621	N95041	93.00	582.11	6.26	0.00	3.00	10	104.78	Lung	LID not found	Other
15675	42415	R60981	10.38	95.92	9.24	0.00	1.00	1	639.73	CNS	Adrenal gland	Eye
15676	1473690	AA916728	7.54	77.58	10.29	5.00	1.00			Ignore	Colon	Blood
15689	767236	AA424675	42.85	235.28	5.49	2.00	0.00	2	645.89	Larynx	Ear	Cervix
15695	648046	AA206914	235.50	1202.45	5.11	1.00	0.00			Testis	LID not found	Other
15697	767259	AA418402	22.33	166.50	7.46	0.00	4.00			Cervix	Parathyroid	Lung
15699	43065	R61886	2.15	23.93	11.11	3.00	0.00			Testis	Brain	Pool
15713	767262	AA418392	13.06	457.14	35.00	1.00	0.00			Aorta	CNS	Germ Cell
15723	42872	R61883	4.67	38.88	8.32	1.00	1.00	X	356.17	Pooled	Eye	Tonsil
15726	786308	AA451863	9.52	117.89	12.38	6.00	0.00	12	42.89	Esophagus	Spleen	Parathyroid
15729	767273	AA418408	8.82	102.95	11.66	0.00	1.00			CNS	Germ Cell	Pool
15731	43080	R61289	5.09	38.68	7.59	0.00	1.00	20	247.78	Skin	Adrenal gland	Bone
15735	567055	AA131315	20.35	200.56	9.86	4.00	0.00			Lung	Testis	LID not found
15738	726821	AA398341	6.22	36.00	5.79	0.00	1.00	4	671.55	CNS	Testis	Eye
15783	281545	N51601	50.58	290.69	5.75	0.00	1.00			CNS	LID not found	Other

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15768	429447	AA007826	53.69	301.95	5.62	1.00	0.00			Pool	LID not found	Other
15778	586421	AA148859	46.20	291.97	6.32	0.00	3.00	8	300.32	Cervix	Colon	Placenta
15786	322028	W37424	39.95	282.31	7.07	0.00	1.00	2	97.87	Parathyroid	Breast	LID not found
15803	282481	N52039	133.96	802.08	5.99	0.00	2.00			CNS	LID not found	Other
15814	220059	H85434	81.15	500.26	6.16	2.00	0.00	5	283.46	Eye	LID not found	Other
15822	219961	H84795	15.29	101.73	6.65	2.00	1.00	8	114.62	Tonsil	Eye	Germ Cell
15827	284457	N52337	21.06	250.86	11.91	2.00	5.00			CNS	LID not found	Other
15831	284545	N64762	7.10	36.46	5.13	1.00	0.00			CNS	LID not found	Other
15832	430313	AA010611	5.01	44.59	8.89	3.00	0.00			Pool	LID not found	Other
15843	243602	N49717	21.65	125.16	5.73	2.00	0.00	10	188.13			
15846	797042	AA463221	10.34	105.79	10.23	1.00	0.00			Whole embryo	Pool	LID not found
15849	611269	AA176506	8.63	147.49	17.10	0.00	1.00			Muscle	Whole embryo	LID not found
15850	784010	AA443695	153.08	890.95	5.82	1.00	2.00	16	162.07	Blood	Whole embryo	LID not found
15862	277508	N56892	21.67	124.24	5.73	0.00	1.00	10	45	Kidney	CNS	Tonsil
15865	612613	AA179392	160.45	1467.32	9.15	2.00	0.00			Cervix	Heart	LID not found
15870	810112	AA464972	40.35	251.92	6.24	0.00	2.00	3	732.12	Parathyroid	Ovary	LID not found
15880	1031592	AA609473	16.60	88.22	5.32	1.00	0.00			Pooled	Blood	Muscle
15882	838003	AA434482	360.37	2332.06	6.47	2.00	0.00	6	-2.94	Eye	LID not found	Other
15884	255182	N22033	7.28	121.39	16.68	1.00	0.00	6	118.59	Adrenal gland	Pooled	Nose
15893	120528	T95320	50.76	667.01	13.14	0.00	5.00			Pool	LID not found	Other
15897	322588	W15284	287.42	1721.92	5.99	0.00	2.00	19	41.59	Parathyroid	Colon	LID not found
15901	757190	AA443958	16.59	107.12	6.46	0.00	1.00	14	17.22	Thymus	Synovial mem	Cervix
15903	627288	AA191493	16.60	139.16	8.28	0.00	2.00			Cervix	Eye	LID not found
15906	730732	AA435985	21.89	146.53	6.70	1.00	0.00			Skin	Pooled	Kidney
15916	279269	N48593	12.17	74.93	6.16	1.00	0.00			Adrenal gland	CNS	Eye
15919	796159	AA461091	16.15	86.33	5.35	1.00	0.00			Whole embryo	Testis	Tonsil
15920	1049185	AA620697	7.39	185.46	25.10	1.00	0.00			Bone	Muscle	Testis
15921	743588	AA609463	70.39	406.39	5.77	0.00	1.00	21	217.43	Thyroid	Foreskin	-
15922	757365	AA437124	116.62	937.30	8.04	0.00	4.00	14	219.18	Testis	Prostate	LID not found
15924	122088	T98287	8.44	48.09	5.46	1.00	1.00			Pool	LID not found	Other
15926	753794	AA410383	5.29	35.15	6.65	2.00	0.00	4	437.61	Spleen	Germ Cell	Lymph
15927	511952	AA100674	465.83	9928.18	21.31	6.00	0.00			Colon	Brain	LID not found
15928	1056172	AA620995	21.52	129.21	6.00	3.00	0.00	15	144.49	-	Kidney	Blood
15931	279936	N57535	5.02	77.38	15.43	4.00	0.00	5	610.42	Gall bladder	Colon	CNS
15934	843276	AA488658	301.86	1685.70	5.58	0.00	2.00			Adipose	Cervix	Adrenal gland
15938	1048714	AA620628	89.47	578.60	6.47	0.00	3.00			Lung	Testis	LID not found
15940	666029	AA193579	13.56	189.67	13.99	6.00	0.00	X	244.38	Blood	CNS	Pool
15943	767456	AA417994	15.03	89.67	5.97	1.00	0.00	7	436.03	Spleen	Placenta	Uterus
15950	1033342	AA621381	635.67	3258.35	5.13	1.00	0.00	7	133.06			
15952	753957	AA479362	42.42	495.61	11.68	3.00	0.00			Pooled	CNS	-
15957	247862	N58276	85.25	489.92	5.75	2.00	0.00	5	355.29	Pool	LID not found	Other
15977	276441	N40211	63.28	377.14	5.96	0.00	2.00			Smooth musc	CNS	LID not found
15982	1030618	AA608824	10.75	68.83	6.40	1.00	0.00			Testis	Pool	LID not found
15986	292837	N68578	14.17	94.75	6.69	0.00	4.00			Pool	LID not found	Other
15993	214179	H77814	35.90	275.50	7.67	0.00	3.00			Pool	LID not found	Other
16008	753993	AA478982	13.41	71.01	5.30	0.00	1.00			Ear	Pooled	Parathyroid
16019	788213	AA453435	47.10	252.45	5.36	0.00	2.00			Stomach	Uterus	Aorta
16031	788526	AA452802	26.41	196.86	7.45	0.00	1.00			Parathyroid	Whole embryo	Colon
16046	35681	R45970	3.85	20.22	5.26	1.00	0.00	11	252.96			
16055	1470048	AA865464	37.10	244.02	6.58	1.00	0.00			Ovary	Pancreas	Stomach
16058	26759	R36505	7.25	491.44	67.78	2.00	0.00	X	295.78	Whole embryo	Kidney	Brain
16062	35788	R45976	3.95	31.68	8.03	0.00	1.00	X	88.99	Colon	CNS	Testis
16065	812242	AA455041	25.60	137.42	5.37	0.00	1.00			Pool	LID not found	Other
16067	768590	AA425116	24.97	148.71	5.88	2.00	0.00			Colon	Testis	Brain
16071	1475659	AA872020	6.71	199.68	29.75	14.00	1.00			Pooled	Pancreas	Stomach

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16072	435934	AA701944	9.42	63.64	6.76	1.00	0.00					
16079	1470530	AA864524	29.34	148.49	5.06	1.00	0.00	20	197.2	Parathyroid	Placenta	Foreskin
16086	35804	R48000	4.09	158.41	38.75	0.00	1.00	4	499.2	Brain	Testis	LID not found
16087	1475595	AA873885	6.76	135.95	20.05	8.00	0.00					
16090	27277	R37457	1.43	7.40	5.18	1.00	1.00	7	511.72	Pancreas	Brain	LID not found
16117	823575	AA497044	25.90	134.32	5.19	0.00	1.00	2	182.89	Blood	Tonsil	Foreskin
16120	447167	AA702973	9.06	48.14	5.31	1.00	0.00					
16123	53331	R15822	1.56	10.69	6.86	1.00	0.00			Tonsil	Brain	LID not found
16128	450152	AA703449	7.44	51.38	6.91	1.00	0.00					
16130	595697	AA187382	9.76	58.78	6.02	1.00	0.00	17	374.6	Ear	Colon	Blood
16131	254749	N25085	231.79	1569.52	6.77	2.00	0.00	18	333.64	Nose	LID not found	Other
16134	510688	AA101954	7.60	39.55	5.20	1.00	0.00			Pooled	Placenta	Lymph
16147	784276	AA447480	14.22	171.58	12.07	1.00	1.00			CNS	Whole embryo	Pool
16148	305556	N90218	15.77	81.95	5.20	0.00	1.00	11	45.93	Parathyroid	LID not found	Other
16152	323806	W46341	34.87	184.88	5.30	1.00	0.00			-	Tonsil	Heart
16174	566597	AA149987	7.57	69.85	9.23	2.00	0.00	6	111.13	Thymus	Germ Cell	Parathyroid
16176	324322	W47416	7.96	59.11	7.43	0.00	1.00			-	Pool	LID not found
16183	279464	N48794	168.77	1218.43	7.22	2.00	0.00			CNS	LID not found	Other
16186	810027	AA455275	7.28	51.92	7.13	3.00	0.00	20	11.91	Pooled	Ovary	Parathyroid
16192	324983	W49487	61.73	387.67	6.28	0.00	3.00	1	146.01	Aorta	-	Whole embryo
16202	588139	AA132172	117.75	750.27	6.37	0.00	4.00	8	358.37	-	Colon	Pool
16203	322005	W37418	27.10	141.67	5.23	1.00	0.00	2	703.17	Thymus	Whole embryo	Parathyroid
16204	306384	N90704	8.22	181.10	22.03	1.00	0.00			Whole embryo	Lung	LID not found
16206	813237	AA181767	12.54	257.51	20.53	0.00	1.00	17	341.05	Pooled	Placenta	Pool
16211	257206	N26899	49.64	326.85	6.62	0.00	2.00	2	402.09	Germ Cell	Eye	Kidney
16220	303110	N90774	60.91	313.84	5.15	0.00	2.00	5	108.43	Gall bladder	Testis	Kidney
16223	279703	N49005	4.61	40.05	8.69	2.00	0.00			CNS	LID not found	Other
16229	743481	AA609392	5.04	39.05	7.74	1.00	0.00			Uterus	Testis	Lung
16231	626848	AA191426	97.61	649.50	6.63	1.00	0.00	6	44.4	Neural	Esophagus	Foreskin
16235	842840	AA486277	175.91	1425.30	8.10	2.00	0.00	1	678.07			
16238	730858	AA416984	78.23	492.69	6.30	2.00	1.00	X	245.06	Testis	LID not found	Other
16248	214624	H71242	7.15	80.34	11.24	4.00	0.00	1	32.73	Pool	LID not found	Other
16263	531459	AA074079	213.29	1097.38	5.14	0.00	1.00			Uterus	Brain	Heart
16264	232912	H72643	66.12	666.70	9.79	2.00	3.00	5	379.83	Pool	LID not found	Other
16269	587268	AA132660	6.24	40.28	6.45	0.00	1.00	17	316.02	Colon	LID not found	Other
16271	595001	AA164782	19.84	171.97	8.67	2.00	0.00	8	390.78	Ear	Whole embryo	Ovary
16279	139304	R63714	155.10	854.15	5.51	2.00	0.00			Cervix	Placenta	LID not found
16281	592403	AA159497	0.80	11.45	14.28	4.00	0.00	1	167.12	Pancreas	Eye	Pool
16285	731198	AA417355	3.55	49.29	13.87	6.00	0.00	1	75.41	Parathyroid	Lung	Uterus
16286	197638	R96198	562.33	3431.32	6.10	1.00	0.00	1	263.38	Tonsil	Pool	LID not found
16298	743197	AA401436	15.16	181.33	11.96	0.00	4.00	8	103.36	Testis	LID not found	Other
16303	357190	W93544	471.01	2915.09	6.19	1.00	0.00			Aorta	Foreskin	Whole embryo
16304	233627	H78411	49.18	259.02	5.27	2.00	1.00			Pool	LID not found	Other
16305	529118	AA064869	8.82	53.77	6.10	1.00	0.00	17	102.53	Gall bladder	Adrenal gland	Tonsil
16313	796671	AA461490	5.52	31.12	5.64	1.00	0.00	2	233.5	Pooled	Whole embryo	Uterus
16315	838874	AA481795	129.64	652.97	5.04	1.00	0.00			Eye	Lymph	LID not found
16316	123585	R00835	44.96	274.86	6.11	0.00	3.00			Pool	LID not found	Other
16317	565947	AA136540	36.74	208.53	5.68	1.00	0.00			Eye	LID not found	Other
16318	731202	AA417252	4.57	32.74	7.17	1.00	0.00	6	39.19	Testis	Pool	LID not found
16321	66734	T64898	75.71	399.75	5.28	0.00	1.00			Pool	LID not found	Other
16325	201213	R99471	365.60	2018.96	5.52	0.00	2.00	15	227.19	Pool	LID not found	Other
16326	323041	W42450	322.08	1735.00	5.39	1.00	0.00	19	271.02	-	LID not found	Other
16336	29583	R42218	208.26	1111.72	5.34	0.00	1.00	14	130.93	Brain	LID not found	Other
16341	208789	H83241	414.26	2136.92	5.16	1.00	0.00	1	153.98	Pool	LID not found	Other
16351	43733	H04789	13.44	67.89	5.05	0.00	1.00	X	74.75	Breast	Prostate	Colon

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16357	233942	H66122	80.90	487.59	6.03	0.00	2.00	1	101.02	Pool	LID not found	Other
16375	42331	R61821	67.34	378.58	5.62	2.00	0.00	8	449.66	Brain	LID not found	Other
16400	35620	R45632	8.48	48.45	5.71	1.00	0.00			Colon	Lung	Pool
16402	427778	AA002258	67.42	728.00	10.80	1.00	4.00			Peripheral ner	Pool	LID not found
16405	239943	H81938	159.60	842.34	5.28	0.00	2.00			Pool	LID not found	Other
16408	44092	H06282	14.23	89.83	6.31	1.00	2.00	10	92.24	Placenta	Pool	Lung
16409	262262	H99362	4.06	25.85	6.37	0.00	1.00	2	714.07	Foreskin	-	Kidney
16415	42803	R60014	3.64	20.46	5.62	2.00	0.00	7	592.03	Peripheral ner	Adipose	Brain
16421	788596	AA425056	9.20	58.99	6.41	2.00	0.00	5	421.53	Heart	Pool	LID not found
16430	786534	AA452118	18.17	111.38	6.13	0.00	1.00			Eye	Whole embryo	LID not found
16435	42807	R60135	3.29	19.33	5.88	1.00	0.00			Brain	LID not found	Other
16438	786537	AA452130	149.27	1224.89	8.21	0.00	2.00	3	485.68	Pooled	Whole embryo	Prostate
16439	898204	AA598594	7.74	50.13	6.48	2.00	0.00			Kidney	Brain	Pool
16454	786545	AA452134	23.63	129.22	5.47	1.00	0.00	8	39.72	Thyroid	Foreskin	Parathyroid
16467	42816	R60044	17.05	97.62	5.73	1.00	0.00	3	143.02	Thyroid	Lung	Pool
16472	1367900	AA810225	2.63	17.38	6.14	1.00	0.00			Tonsil	Placenta	Pool
16477	788953	AA424920	8.45	54.20	6.41	1.00	0.00	7	57.93	Ear	Pooled	Placenta
16478	786580	AA452250	6.91	67.80	9.81	1.00	0.00			Lung	Whole embryo	Brain
16479	898227	AA598625	11.78	63.87	5.42	0.00	1.00	2	201.74	Foreskin	Spleen	Brain
16482	726858	AA398355	36.84	241.60	6.56	1.00	0.00			Testis	LID not found	Other
16485	788961	AA425543	5.19	31.53	6.08	1.00	0.00			Tonsil	Pool	LID not found
16489	37980	R61372	1.88	148.03	87.95	4.00	4.00	13	282.85	Ear	CNS	Bone
16500	111489	T90789	2.88	15.78	5.48	1.00	0.00			Kidney	Lung	Pool
16506	726889	AA398430	5.87	78.61	13.38	2.00	0.00			Testis	LID not found	Other
16511	898259	AA598679	51.55	286.40	5.56	0.00	1.00			Cervix	Spleen	Parathyroid
16538	796330	AA461318	81.82	564.13	6.89	0.00	2.00			Whole embryo	Colon	Foreskin
16547	247840	N53870	105.64	813.61	7.70	1.00	3.00			Pancreas	Lung	Pool
16562	796117	AA460961	7.15	68.47	9.58	2.00	0.00	17	42.61	Skin	Pooled	Foreskin
16588	416644	W86445	42.56	359.85	8.46	0.00	4.00	12	443.42	Pool	LID not found	Other
16611	292531	N62852	8.18	70.07	8.58	1.00	0.00	2	144.58	Pancreas	Testis	Whole embryo
16612	510578	AA055788	5.41	257.50	47.64	5.00	0.00			Colon	Prostate	Heart
16615	511060	AA100293	7.37	46.12	6.26	1.00	0.00			Colon	Testis	LID not found
16616	1031698	AA609558	37.88	270.79	7.15	1.00	0.00			Smooth musc	Testis	-
16619	292122	N62434	14.00	145.88	10.42	3.00	0.00	2	209.24	Pool	LID not found	Other
16620	729956	AA412047	6.17	32.75	5.30	1.00	0.00			Testis	Tonsil	Colon
16621	511117	AA088231	7.72	74.17	9.60	1.00	0.00	1	191.7	Kidney	Colon	Brain
16634	784032	AA443712	13.38	74.39	5.56	1.00	0.00			Colon	Whole embryo	LID not found
16636	240148	H82435	8.91	58.86	6.61	3.00	0.00	7	875.72	CNS	Heart	Pool
16637	810217	AA464698	51.18	448.96	8.77	0.00	1.00			Skin	Stomach	Blood
16638	841621	AA467468	10.19	72.54	7.12	4.00	0.00	7	105.6	Lung	Breast	Pool
16644	415712	W84858	30.98	354.57	11.44	5.00	0.00			Pool	Heart	LID not found
16648	1030849	AA608775	55.61	333.70	6.00	1.00	3.00			Testis	Pool	LID not found
16651	840937	AA486538	8.58	44.26	5.16	1.00	0.00	12	427.01	Eye	Thyroid	Parathyroid
16655	770854	AA427737	15.85	106.92	6.75	1.00	0.00			Blood	Eye	Ovary
16659	293058	N83777	639.84	3692.85	5.77	2.00	0.00	8	361.52	Pool	LID not found	Other
16669	796723	AA443140	8.19	99.35	12.13	6.00	0.00			Marrow	Ovary	-
16678	897587	AA496884	8.88	116.50	13.12	2.00	0.00			Spleen	Parathyroid	Kidney
16679	503234	AA151621	5.20	42.88	8.24	3.00	0.00	7	15.78	Pooled	Breast	Colon
16684	124139	R01248	15.32	133.38	8.70	2.00	4.00	10	49.08	Pool	LID not found	Other
16685	289019	N82735	4.51	27.79	6.16	0.00	1.00	2	545.43	CNS	Eye	Lung
16699	131452	R23270	25.24	176.24	6.98	0.00	1.00	4	201.71			
16701	757244	AA426025	12.54	336.28	26.82	3.00	0.00	15	285.97	Germ Cell	Pancreas	Blood
16703	197056	R92601	17.51	224.18	12.80	0.00	1.00	3	391.77	Small intestine	Aorta	Placenta
16713	279306	N48353	240.04	1299.90	5.42	0.00	2.00	1	340.75	CNS	LID not found	Other
16723	813730	AA453783	14.01	662.63	47.31	17.00	2.00	8	463.73	Thyroid	Stomach	Parathyroid

Table 2A

16726	1030543	AA608923	66.21	439.99	6.45	0.00	3.00			Testis	LID not found	Other
16729	279176	N46845	10.34	183.72	17.76	1.00	0.00			CNS	LID not found	Other
16730	627668	AA197344	66.40	489.86	5.67	1.00	0.00			Cervix	LID not found	Other
16738	754101	AA478618	8.96	118.63	13.25	2.00	0.00			Adipose	Heart	Whole embryo
16757	278166	N63529	10.80	63.85	5.91	1.00	2.00	7	516.49	CNS	LID not found	Other
16766	754126	AA478623	8.36	74.13	8.84	2.00	0.00	6	620.52	Ear	Pancreas	Bone
16783	39189	R54443	11.88	259.67	22.23	1.00	0.00	7	501.89	Brain	Prostate	-
16786	836888	AA481601	51.94	533.77	10.28	2.00	5.00			Eye	LID not found	Other
16787	44081	H06266	12.14	100.01	8.24	0.00	3.00	2	75.63	Whole embryo	Testis	Pool
16789	293975	N64024	53.28	351.08	6.59	0.00	4.00	17	337.96	Pool	LID not found	Other
16804	180179	R85537	4.74	24.86	5.27	1.00	0.00	20	210.72	Pancreas	Lymph	Heart
16806	37205	R49592	2.20	12.08	5.51	0.00	1.00			Brain	LID not found	Other
16810	28705	R40357	420.29	2363.88	5.62	0.00	2.00			Neural	Whole embryo	LID not found
16818	29030	R40377	35.67	255.76	7.17	2.00	0.00	3	127.29	Thyroid	Bone	Whole embryo
16819	53031	R15946	36.42	214.31	5.88	1.00	2.00	1	179.58	Brain	LID not found	Other
16824	448514	AA777637	7.53	45.64	6.06	2.00	0.00					
16828	161172	H25223	6.30	33.03	5.25	0.00	1.00	7	74.01	Whole embryo	Brain	Breast
16831	1323328	AA872602	2.96	37.58	12.70	2.00	0.00	3	155.35	Kidney	Heart	Pool
16837	823615	AA496957	10.81	56.92	5.27	1.00	0.00	9	84.38	Placenta	Breast	Tonsil
16846	450080	AA703392	81.62	466.00	5.95	0.00	1.00					
16850	28958	R40967	8.55	82.56	9.66	9.00	0.00			Brain	LID not found	Other
16858	29077	R40983	147.22	747.28	5.08	0.00	1.00			Brain	Whole embryo	Pool
16859	53158	R16146	3.83	31.36	8.18	1.00	1.00			Kidney	Foreskin	Pool
16863	1323448	AA873604	66.53	527.84	7.93	7.00	1.00	22	50.5	CNS	Blood	Lung
16868	172751	H19687	4.35	23.84	5.48	3.00	0.00	9	238.05	Germ Cell	Brain	Breast
16870	37505	R51103	6.14	65.89	10.73	1.00	0.00	11	117.35	Brain	LID not found	Other
16879	1323539	AA858296	4.23	28.96	6.85	2.00	0.00			Kidney	Pool	LID not found
16880	450710	AA704448	66.32	428.08	6.45	0.00	1.00					
16882	29251	R41389	11.62	203.87	17.54	1.00	0.00	12	250.83	Brain	LID not found	Other
16883	53061	R16144	5.27	34.96	6.64	0.00	1.00			-	Lung	Brain
16884	221828	H92234	2.34	23.32	9.96	3.00	0.00	2	742.57	Brain	Germ Cell	Eye
16885	823647	AA496984	10.07	169.12	16.80	7.00	1.00	X	287.68	CNS	Pooled	Whole embryo
16887	1323591	AA858026	19.86	697.83	35.12	7.00	0.00	14	251	Adrenal gland	Germ Cell	Gall bladder
16889	812971	AA464603	21.91	122.89	5.61	1.00	0.00	9	259.71	Pooled	CNS	Parathyroid
16892	360392	AA013268	71.98	531.97	7.39	0.00	4.00	3	697.77	Eye	Kidney	Testis
16894	38391	R49033	5.92	42.44	7.17	1.00	0.00			Brain	LID not found	Other
16896	450745	AA704492	12.94	80.00	6.18	0.00	1.00					
16907	257926	N27026	484.62	2447.39	5.05	1.00	0.00	17	527.46	Esophagus	Pool	LID not found
16910	839862	AA490044	11.03	70.26	6.37	3.00	0.00	21	154.34	Neural	Brain	Eye
16918	729924	AA399833	22.10	113.58	5.14	1.00	0.00	10	538.58	Synovial mem	Uterus	-
16928	340904	W57767	4.41	28.83	6.54	1.00	0.00			Heart	Testis	LID not found
16934	731348	AA421018	6.30	74.38	11.81	1.00	0.00	2	741.96	Testis	Pancreas	Colon
16943	731275	AA420998	316.25	1982.87	6.27	2.00	0.00			CNS	Testis	LID not found
16956	307995	N92293	208.70	1483.93	7.11	0.00	2.00	6	599.03			
16962	595161	AA173408	24.92	212.05	8.51	2.00	0.00	6	64.16	Pooled	Placenta	Muscle
16971	772962	AA476258	110.48	584.25	5.29	1.00	0.00	22	99.67	Synovial mem	Parathyroid	Whole embryo
16979	259627	N29776	9.89	52.38	5.30	1.00	0.00	12	92.4	Colon	-	Testis
16983	280308	N47075	6.34	275.05	43.41	4.00	0.00	16	191.31	CNS	Testis	Kidney
16997	565949	AA136541	71.25	469.49	6.59	0.00	2.00			Eye	LID not found	Other
17004	127711	R09504	7.00	40.11	5.73	0.00	2.00			Pool	Heart	LID not found
17010	742586	AA401347	14.68	80.49	5.48	1.00	0.00			Testis	Kidney	LID not found
17020	128810	R07268	151.49	1000.79	6.61	2.00	1.00			Pool	LID not found	Other
17025	360035	AA063577	97.68	497.57	5.09	1.00	0.00	6	369.24	Heart	LID not found	Other
17030	731193	AA417356	4.29	26.97	6.29	1.00	0.00			Testis	LID not found	Other
17032	243024	H95689	31.61	186.64	5.90	1.00	1.00	20	31.88	Pool	LID not found	Other